# Executive Summary

On-site releases reported under TRI for 2005 were lower by 18% when compared to 2004, and they were lower by 29% when compared to 1998. Total "TRI-reportable waste," including on-site releases, transfers off-site, and on-site waste management, increased 4.4%, or 4.1 million pounds compared to 2004, but has declined five out of the last seven years. Since 1998 the total TRI-reportable waste decline has been 36.7%, or 55.9 million pounds. The decrease in total TRI waste has been driven by differing waste category amounts, depending on the year, and is detailed in this report.

The largest change in on-site release in 2005 is the reported decrease in the hydrochloric acid release from the Indian River Power Plant. Indian River reported an 800,000 pound reduction (22 %) in release of this chemical. This was not related to changes in their production of electricity, but rather to reduced amounts of chlorine in the coal burned, some of which came from a different source than in 2004. Another reason for changes in reported amounts is that some facilities changed to more accurate methods of estimating values in their reports. These new methods may increase or decrease the reported release amount of a specific chemical. These changes, combined with normal facility variations in production and reported amounts, resulted in the decrease in the reported amount of on-site releases.

# Introduction

## What is the Toxics Release Inventory?

The Toxics Release Inventory, or TRI, is a publicly available data set containing information reported annually for toxic chemicals manufactured, processed, or otherwise used by certain facilities in Delaware and throughout the United States. Annually, these facilities report releases and waste management information for covered chemicals. The reportable list of toxic chemicals for 2005 included 581 individual chemicals and 30 chemical categories. TRI was established in 1986 under Title III, Section 313, of the Federal Superfund Amendments and Reauthorization Act (SARA 313) to provide information to the public about the presence and release of toxic chemicals in their communities. Title III is also known as the Emergency Planning and Community Right-to-Know Act (EPCRA).

Covered facilities report TRI information to the U.S. Environmental Protection Agency (EPA) and to the state in which the facility is located. In Delaware, the EPCRA Reporting Program within the Department of Natural Resources and Environmental Control (DNREC) receives and compiles TRI data from facilities located within the State. The EPCRA Reporting Program maintains a database that is updated as new reports and revisions to old reports are received. The database currently contains nineteen years of reported data. Most releases reported under TRI are also regulated through Federal and/or State permits.

This report contains detail from every 2005 TRI report and report revision from Delaware facilities filed with and received by DNREC as of November 1, 2006. Facilities must submit these reports to DNREC and EPA by July 1 of each year. Several types of analyses are presented based on this data and data from prior years.

A second, less detailed report that provides a summary of the data presented here is also available. See **Access to TRI Files** on page 55 for details.

TOXICS RELEASE INVENTORY

# Reporting Requirements

A facility is required to submit a report for a listed toxic chemical if the facility meets all of the following criteria:

1. Employs the equivalent of 10 or more full-time employees,
2. Is a covered industry, or is a federal facility (See Table 1 below for a list of covered industries), and,
3. Manufactures or processes more than 25,000 pounds, or otherwise uses more than 10,000 pounds, of the listed toxic chemical during the course of the calendar year. Limits for specific chemicals known as PBTs (Persistent Bioaccumulative Toxics) are lower (see Table 7 on page 33).

Note that from time to time, the EPA proposes changes in reporting requirements. It gives agencies, reporting facilities, and other interested parties time to comment on these changes prior to making a final decision about the proposed change. See page 4 for more details.

Facilities that meet the criteria for reporting must submit one report for each listed toxic chemical manufactured, processed, or otherwise used above threshold quantities. The reports cover activities during the previous calendar year.

It is important to note that a facility may need to report even if it has no releases of toxic chemicals, because reporting is based on the amount manufactured, processed, or otherwise used, and not the amount released.

## TABLE 1
## COVERED INDUSTRIES

| SIC CODES | INDUSTRY |
|---|---|
| 10XX * | Metal Mining |
| 12XX * | Coal Mining |
| 20-39XX | Manufacturing |
| 4911 * | Oil and |
| 4931 * | Coal Fired |
| 4939 * | Electric Utilities |
| 4953 * | Facilities Regulated Under RCRA Subtitle C |
| 5169 * | Wholesale Chemical Distributors |
| 5171 * | Wholesale Petroleum Stations and Terminals |
| 7389 * | Solvent Recovery Services |
| ** | Federal Facilities |

* Added in 1998 ** Added in 2000

Table 1 provides a list of covered industries along with corresponding 4-digit Standard Industrial Classification (SIC) codes. SIC codes are used to identify the type of activities performed at a facility. Each industry sector represented by facilities reporting in Delaware for 2005 is described in Table 5 on page 14.

The standard Form R report (see Appendix N for Forms) contains general facility information and data about on-site releases, off-site transfers, and on-site waste management activities. In lieu of Form R, the optional short form (Form A) may be used, provided certain criteria are met. Form A, initiated in the 1997 reporting year, is a two-page report that provides facility information (essentially the same as Form R) and identification of the chemical, but does not provide any release, transfer, or waste management data. After a facility determines that it must report on a given chemical, the facility is eligible to use Form A for that chemical if:

1. The sum of the annual releases, transfers, and wastes managed on-site (known as the "reportable amount") does not exceed 500 pounds, and,
2. The total annual amount of the chemical manufactured, processed, or otherwise used does not exceed 1,000,000 pounds, and,
3. The chemical is not a persistent bioaccumulative toxic (PBT) chemical.

## Limitations of TRI Data

The user of TRI data should be aware of its limitations in order to interpret its significance accurately.

- **NOT ALL FACILITIES ARE REQUIRED TO REPORT.** A relatively small number of facilities in Delaware are required to report under TRI, based on the criteria listed on pages 2 - 3.
- **OTHER SOURCES NOT COVERED UNDER TRI ALSO RELEASE TOXIC CHEMICALS.** Other significant sources of pollution include small businesses, motor vehicles, and agricultural operations, as examples. For some chemicals, their use as consumer products is a significant source of releases.
- **FACILITIES ARE REQUIRED TO BASE TRI DATA ON MEASUREMENTS AND MONITORING DATA IF THESE ARE AVAILABLE AT THE FACILITY.** If such data is not available, quantities may be estimated based on published emission factors, mass balance calculations, or good engineering judgment. Additional monitoring equipment and measurements are not required. For 2005, 10% of the reports representing 59% of reported on-site release amounts were estimated using monitoring data, with the balance being split between emission factors, mass balance calculations, and other methods.
- **THE DATA ESTIMATION METHODS MAY CHANGE OR VARY.** The methods of estimating, analytical methodology, or basis of calculating data used by different facilities, or even the same facility over time, may vary, and may result in significant changes in reporting while the actual release may remain relatively unchanged. DNREC performs cross-checks of the data with other information sources to verify its accuracy and contacts facilities concerning apparent discrepancies.
- **REVISIONS TO FORM R MAY OCCUR AT ANY TIME.** These revisions sometimes involve significant changes for data previously reported by a facility.
- **THE DATA DOES NOT INDICATE AMOUNT OF HUMAN EXPOSURE.** An important consideration to keep in mind is that TRI does not provide an indication of potential exposure to the reported releases and cannot be used by itself to determine the impact on public health. The chemical's release rate, toxicity, and environmental fate, as well as local weather and wind direction and the proximity of nearby communities to the release must be considered when assessing exposures. Small releases of highly toxic chemicals may pose greater risks than large releases of less toxic chemicals. The potential for exposure increases the longer the chemical remains unchanged in the environment. Some chemicals may quickly break down into less toxic forms, while others may accumulate in the environment, becoming a potential source of long-term exposure. The chemical exposure of a population depends on the environmental media (air, water, land) into which the chemical is released. The media also affects the type of exposure possible, such as inhalation, dermal exposure, or ingestion.

Despite these limitations, TRI serves as a valuable screening tool to identify areas of concern that may require further investigation.

TOXICS RELEASE INVENTORY

# Recent Developments in TRI Reporting

The TRI reporting requirements change as EPA seeks to improve the program through changes to the list of reportable chemicals and through program expansions. Because of these changes, considerable caution must be exercised when comparing TRI data from previous years. Some of the data presented later in this report will be adjusted for changes that have been made in order to present the data on a more constant reporting basis from year to year. Notations will be made to indicate which data is presented with these adjustments.

- **Chemical List Changes**
  For reporting 1995 and beyond, EPA significantly expanded the list of chemicals. For reporting year 2000 and beyond, EPA established substantially lower reporting thresholds for 15 chemicals and 2 chemical categories that are highly persistent and bioaccumulative in the environment (PBTs). See page 33 for PBT data. In 2004, EPA removed methyl ethyl ketone (MEK) from the list of reportable chemicals, and naphthalene, already on the TRI list, was also added to the list of carcinogens.

- **Industry Expansion**
  Beginning with the 1998 reporting year, EPA added seven industries to the list of facilities covered under TRI. Prior to the 1998 reporting year, only manufacturers (SIC codes 2000-3999) and federal facilities were required to report (See Table 1 on page 2). EPA included the seven new industries because facilities within these industries manufacture and use substantial quantities of TRI chemicals and engage in activities related to those conducted by manufacturing facilities. The greatest impact to Delaware is the Electric Utilities (4931). The industry expansion significantly increased the amount of reported releases. This did not necessarily represent an increase in toxic releases in Delaware, but rather provided additional information to the public. Some of the data presented later in this report will be adjusted for these changes in order to present the data on a more consistent reporting basis from year to year.

- **Form A Threshold Change for the 2006 Reporting Year**
  EPA has enacted a change to the TRI Form A reporting requirements. See page 2 for a description of Form A and Form R and Appendix N for copies of the reporting forms. The change will increase the Form A total non-PBT waste amount reporting threshold to 5,000 pounds, and no more than 2,000 pounds may be on-site releases, up from the current 500 pounds. It will also begin to allow reporting PBTs, except dioxins, on Form A, if no release or disposal activities occur for the chemical, but at the 500 pound total waste amount threshold. All chemicals reported on Form A will still be required to meet the current 1,000,000 pound manufactured, processed, or otherwise used threshold. Because of the loss of data associated with the conversion of current Form R reports to Form A reports (29% of 2005 Form R reports), DNREC opposed the original proposal and opposes this new rule. See Appendix M for the DNREC response to the original proposal, keeping in mind that all the data reported on pages 2-5 of Form R, except the chemical name, would be lost for those chemicals that are reported on Form A.

- **SIC/NAICS**
  Starting in the 2006 reporting year, four-digit facility SIC codes will be phased out and replaced with six-digit NAICS (North American Industry Classification System) codes. Facilities should not be added or removed from reporting because of this change.

- **Alternate Year Reporting Proposed Change**
  EPA had indicated that they would propose some form of alternate year reporting. However, bowing to the pressure of public opinion, EPA has retracted this proposal.

# 2005 Data Summary

Statewide totals of reported 2005 TRI on-site releases, off-site transfers, and wastes managed on-site are shown in Table 2. On-site releases were lower by 18% compared to 2004. Increased accuracy in reporting the data (stack tests and monitoring vs. estimates) accounts for some of the decreases, while changes in raw materials, pollution controls, and production levels at other facilities account for both decreases and increases. A total of 72 facilities submitted 346 reports on 103 different chemicals. Of the 346 reports, 53 were submitted using Form A. Toluene, benzo (g,h,i)perylene, polycyclic aromatic compounds, methanol, nitrate compounds, and zinc, copper, lead, manganese, and chromium compounds all had greater than 10 reports. Air releases, led by acid gasses, constitute the largest portion of the total on-site releases.

**TABLE 2**

**2005 TRI DATA SUMMARY (IN POUNDS)**

| | 2005 |
|---|---|
| No. of Facilities | 72 |
| No. of Form A's | 53 |
| No. of Form R's | 293 |
| No. of Chemicals | 103 |
| On-site Releases | |
| Air | 6,472,074 |
| Water | 1,211,798 |
| Land | 752,894 |
| Total Releases | 8,436,766 |
| Off-site Transfers | |
| POTWs | 1,514,246 |
| Recycle | 11,259,408 |
| Energy Recovery | 2,709,850 |
| Treatment | 199,493 |
| Disposal | 4,400,539 |
| Total Transfers | 20,083,537 |
| On-site Waste Mgmt. | |
| Recycle | 10,079,028 |
| Energy Recovery | 19,786,104 |
| Treatment | 38,176,991 |
| Total On-Site Mgmt. | 68,042,123 |
| Total Waste | 96,562,426 |

## Types of Data

Table 2 lists all the categories of data reported to Delaware and EPA under the TRI program. Within the reports received from facilities, the data is broken down into additional sub-categories. For ease of presentation in this report, the data has been grouped into these categories as described below.

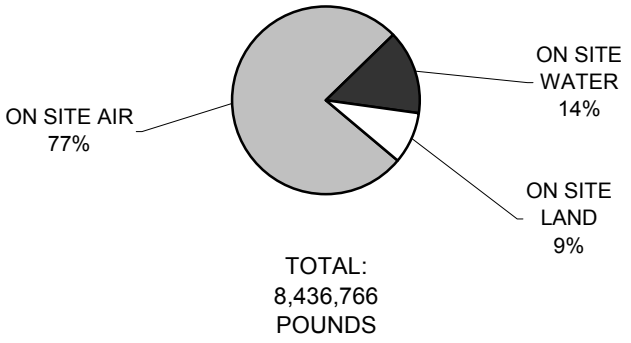
On-Site Releases: There are four categories, but one of these, **underground injection** of TRI chemical waste to wells, is not permitted in Delaware. On-site releases in Delaware are to **air, water,** or **land**. The **air** release category includes stack air collected by mechanical means such as vents, ducts, or pipes, and fugitive air escaping collection, including equipment leaks and evaporation, and is released into the general atmosphere. **Water** releases are to water bodies, including streams, rivers, lakes, bays, or oceans. This includes releases from contained sources, such as industrial process outflow or open trenches. Water releases containing TRI-reportable chemicals in runoff and storm water runoff are also reportable. **Land** releases are to (1) RCRA landfills, in which wastes are buried, (2) surface impoundments, which are uncovered holding areas used to volatilize and/or settle waste materials, (3) other land disposal such as waste piles or releases to land such as spills or leaks, (4) land application/treatment in which waste containing a listed chemical is applied to or incorporated into soil, and (5) other non-RCRA landfills.

Off-Site Transfers: Off-site transfers include transfer of chemical waste to **POTWs** (Publicly owned wastewater treatment plants), **recycle** operations (5 types), **energy recovery** operations (2 types), **treatment** operations (6 types), and **disposal** (14 types). The receiving facilities are separate from the facility generating the waste. This total of 25 sub-categories is provided for the purpose of classifying the types of final off-site waste management undertaken for each chemical.

On-site Waste Management: Waste management operations at the facility generating the waste are categorized to include **recycle**, **energy recovery**, and **treatment.**

# On-Site Releases

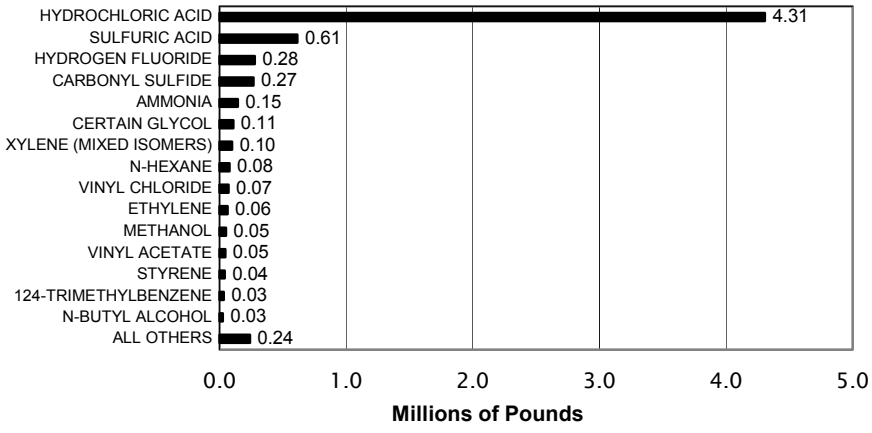
**FIGURE 1**
**2005 REPORTED**
**ON SITE RELEASES**




On-site TRI releases are emissions from a facility to the environment because of normal operations, including emissions to the air, discharges to surface water, disposal onto or into the ground, and under-ground injection. Under-ground injection is not an approved method of TRI or hazardous waste disposal in Delaware, and thus has not been reported by any facility in Delaware since TRI reporting began. Total TRI-reported on-site releases to air, water, and land in 2005 made up less than 9% of all TRI-reported wastes.

Figure 1 shows the on-site releases reported in the State. A large portion, 77% of the total on-site release, is to air. Additional analysis of on-site releases is presented in Figures 2, 3, and 4, showing the top 15 chemicals released to air, water, and land. Additional detail about on-site releases can be found in Appendices C, E, F, and H.

**FIGURE 2**
**TOP 15 CHEMICALS RELEASED TO AIR**




## Releases to Air

Figure 2 provides an illustration of the relative release of the top 15 chemicals compared to the remaining 88 chemicals reported as released in 2005 to the air. As in all the years following the inclusion of power generating facilities, acid gases top the list. Specifically, hydrochloric and sulfuric acid aerosols (gases) and hydrogen fluoride are released from power generating facilities located in all three counties. These three chemicals comprise 80% of all Delaware-reported TRI on-site air releases. Two facilities reported carbonyl sulfide, which accounted for 4.1% of all releases to air. DuPont Edgemoor was the primary reporter of this chemical. Nine facilities reported ammonia, which accounted for 2.2% of all on-site air releases. Formosa Plastics was the primary reporter for ammonia. Ammonia is released from food processing, petrochemical, and chemical facilities. It is used in refrigeration systems and is a by-product of air pollution control activities, primarily at electric generating facilities. Certain glycol ethers and xylene are primarily used as solvents

in paints for the automobile manufacturing industry. The DaimlerChrysler automobile assembly facility accounted for most of these releases. Seven facilities reported on certain glycol ethers (1.7% of on-site releases to air), and nine facilities reported xylene, (1.5% of all on-site releases to air). Six facilities reported on n-hexane (1.2% of total release to air), and 65% of this release was from the Valero refinery.

## Releases to Water

As can be seen in Figure 1 on page 6, releases to water were much lower than releases to air. On-site water releases make up 14% of the total on-site releases, compared to 77% for air. Table 3 provides the amount of TRI chemicals released to each water body that received a TRI chemical. Figure 3 shows the relative relationship of the top 15 TRI chemicals and the 22 other chemicals reported as released to water. This clearly shows the influence that nitrate compounds have on the total. Figure 3 shows that nitrate compounds were the top chemical released (77% of the total water release), followed by manganese compounds (11%), cresol (mixed isomers) (4.6%), phenol (3.7%), and barium compounds (1.1%). The remaining chemicals released to water were each less than 1.0% of total releases to water. The biological treatment of nitrogen-containing materials such as animal waste and ammonia is responsible for the formation of nitrate compounds. Perdue Georgetown was the largest reporter of nitrate compounds at 385,000 pounds, with INVISTA reporting 310,000 pounds and Valero reporting 234,000 pounds. Manganese compounds are formed from ore refining and from impurities in coal used in the power generating facilities. DuPont Edgemoor reported over 99% of the manganese compounds released to water. Cresols and Phenol are products of petroleum refining and were released to water only by Valero. DuPont Edgemoor reported 85% of the barium compounds released to water. These compounds are products of fuel combustion and ore refining.

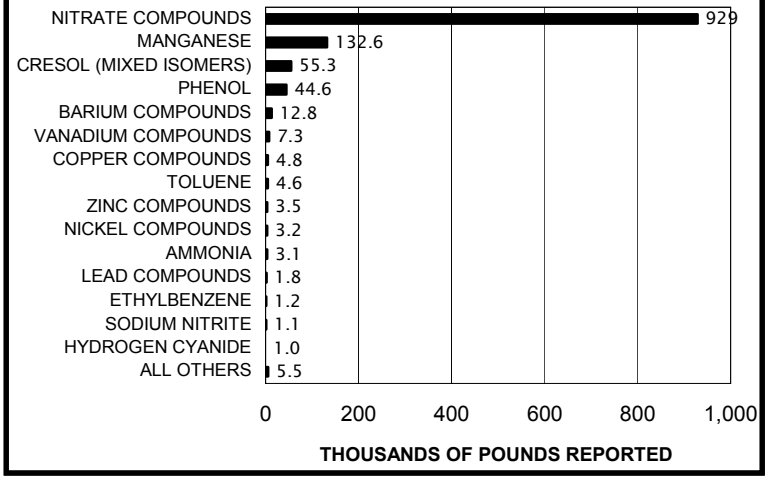
**TABLE 3**

**TRI CHEMICALS RELEASED TO WATER BY WATERSHED**

| WATER BODY | NO. OF FACILITIES | NO. OF REPORTS | RELEASE (POUNDS) |
|---|---|---|---|
| DELAWARE RIVER | 9 | 102 | **511,436** |
| DRAWYER CREEK TRIBUTARY | 1 | 1 | **4** |
| ISLAND CREEK | 1 | 17 | **4,820** |
| MCKEE RUN | 1 | 2 | **0** |
| MUDDY RUN | 1 | 1 | **0** |
| NAAMANS CREEK | 1 | 6 | **34** |
| NANTICOKE RIVER | 1 | 13 | **310,500** |
| RED LION CREEK | 1 | 1 | **4** |
| SAVANNAH DITCH | 1 | 3 | **385,000** |
| STATE TOTAL | 17 | 146 | **1,211,798** |

**FIGURE 3**

**TOP 15 CHEMICALS RELEASED TO WATER**



Not every report to a water body in Table 3 shows a release quantity. For example, of the 102 reports listing the Delaware River as their destination watershed, only 56 reports show an actual release quantity to the Delaware River. The other 46 met the TRI reporting requirements and had the potential to release to the river or may have released chemicals to other media (air or land), but did not report any amounts actually released to the river. In Delaware, 70 of 146 reports listing a water body as a destination for a possible water release did not report any quantities actually released to that water body.

**TABLE 4**

**TRI CHEMICALS**

**RELEASED TO WATER BY BASIN**

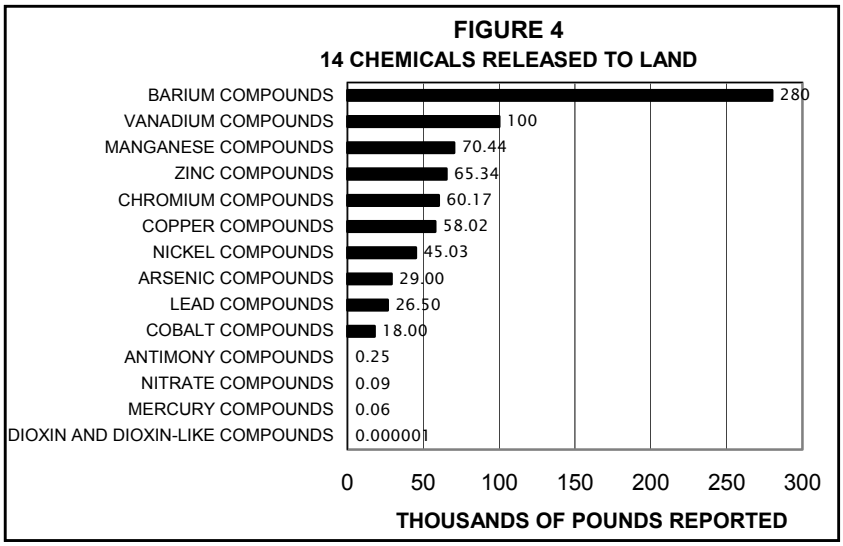
| BASIN | RELEASE (IN POUNDS) | PERCENT |
|---|---|---|
| CHESAPEAKE | 310,500 | 25.6% |
| DELAWARE BAY | 746,630 | 61.6% |
| INLAND BAYS | 4,820 | 0.4% |
| PIEDMONT | 149,849 | 12.4% |
| STATE TOTAL | 1,211,798 | 100.0% |

Table 4 shows the total amount of TRI chemicals released to each basin in the State of Delaware. The Piedmont Basin contains lands that drain into the portion of the Delaware River above New Castle, and the Inland bays include lands that drain into the Indian River Bay/Rehoboth Bay area. All the receiving streams except the Nanticoke River eventually feed into the Delaware Bay. The total amount released to water decreased by 19,000 pounds (1.6%) in 2005. Additional discussion about these releases can be found in the Trend Analysis Section starting on page 40.

## Releases to Land

**FIGURE 4**

**14 CHEMICALS RELEASED TO LAND**




Releases to land, as shown in Figure 1 on page 6, are relatively small, amounting to 9% of total on-site releases. Figure 4 shows the relative contribution for all 14 chemicals reported as being released to land. Nearly all the land releases are metals and metal compounds except for the small quantities of nitrate compounds and dioxins (0.00077 pounds). Most of the metals and metal compounds being reported are formed during the combustion process from metal impurities that exist in coal or crude oil. Barium and vanadium compounds comprise 51% of the total land releases. Land releases by the Indian River power plant and INVISTA facilities, generally the metallic compounds shown above, account for over 99% of the total land releases. Additional discussion about these land releases and their trends can be found in the Trend Analysis Section starting on page 40.

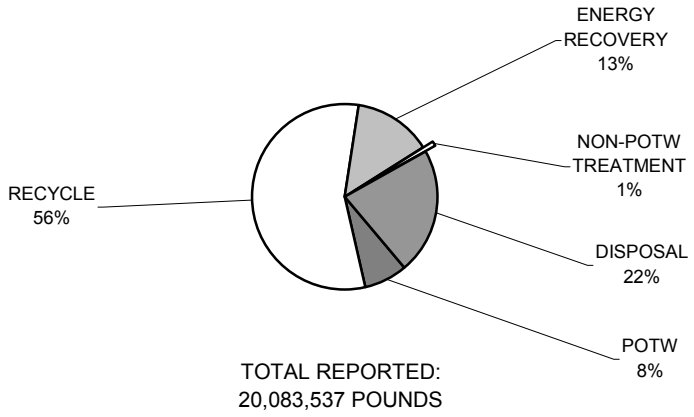
Descriptions about some of the hazards these chemicals may present to us can be found in Appendix K.

# Off-Site Transfers

Off-site transfers are material transfers to off-site locations for the purpose of disposal, recycling, energy recovery, or treatment. Treatment could be at a private waste treatment facility or at a publicly owned treatment works (POTW), typically a municipal wastewater treatment plant.

Figure 5 shows the relative portions transferred to the five off-site transfer categories. Table 2 on page 5 shows these values in tabular form, and Appendices D and G provide additional detail.

**FIGURE 5**
**2005 OFF-SITE TRANSFERS**




TRI Chemicals in wastes are transported by various means through Delaware to their final destinations, many of which are out-of-state. TRI chemicals were sent to 17 states in addition to Delaware, some as far away as Wisconsin and Texas. About 92% of TRI chemicals in all wastes and over 99% of non-POTW wastes that were transferred off-site were sent to out-of-state locations for further processing and/or disposal.

While on-site releases account for 9% of total TRI waste, reported off-site transfers account for 21% of the total TRI wastes. See Figure 7 on page 10 for detail. Off-site transfer to recycle operations accounted for 56% of the amounts within the five categories in off-site transfers, and disposals accounted for almost 22% of the transfers. Eighty-nine percent of the transfers to POTWs were to the City of Wilmington POTW, and virtually all (99%+) of the transfers to POTWs were to Delaware POTW facilities. Cytec, Ciba, DaimlerChrysler, and Rohm & Haas combined for 92% of the total TRI transfers to the Wilmington POTW.

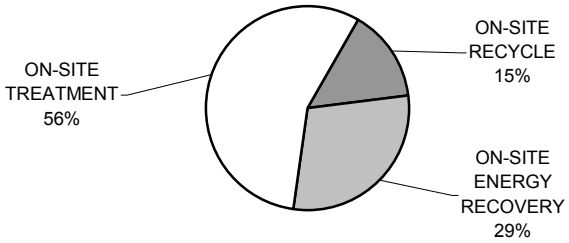
See page 52 for more information on Delaware facilities receiving TRI chemicals from other Delaware TRI facilities and from out-of-state TRI facilities.

TOXICS RELEASE INVENTORY

## On-Site Waste Management

On-Site Waste Management is the amount of wastes that never leave the facility site and are managed by the facility on-site. The categories of **Recycle, Energy Recovery, and Treatment** are used to define on-site management activities related to TRI chemical wastes.

**FIGURE 6**
**2005 ON SITE WASTE MANAGEMENT**

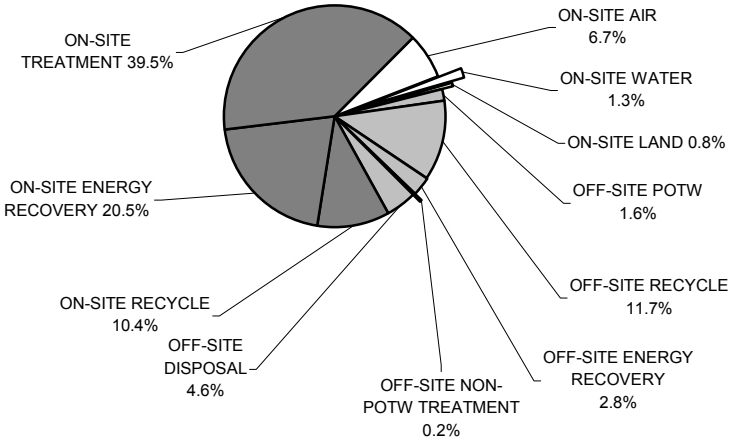



TOTAL REPORTED:
68,042,123 POUNDS

The total amount of TRI chemicals managed on-site is 70 percent of the total TRI chemical waste. This amount is over 8 times the amount of on-site releases. Figure 6 shows the portions of these wastes processed on-site. Appendices D and G provide additional detail about management of this chemical waste. **Recycled** waste is the quantity of the toxic material recovered at the facility and made available for further use. **Energy Recovery** includes the quantity of toxic material that had heat value and was combusted in some form of energy recovery device such as a furnace. The **Waste Treatment** segment includes the amount of toxic material that was destroyed in on-site waste treatment operations. Valero, DuPont Edgemoor, Rohm & Haas, Medal, Noramco, Dow Reichhold, Occidental Chemical, and Indian River Power Plant have the highest total amounts of on-site waste management.

## Total Waste

**FIGURE 7**
**TOTAL 2005 TRI CHEMICAL MANAGEMENT**
**TOTAL REPORTED: 96,562,426 POUNDS**




Total waste is the combined total of the on-site release, off-site transfer, and on-site waste management portions of the TRI chemical report. Figure 7 provides a perspective of the total TRI chemical waste picture in Delaware. About 9 percent of the total reported TRI waste is released on-site, 21 percent is transferred off-site, and 70 percent is managed on-site through treatment, energy recovery, and recycling operations by the facilities generating the waste. Figure 7 shows the relative portions of each major and sub-segment of TRI waste management.

# 2005 Data Detail

## On-Site Releases by County

Figure 8 below provides basic on-site release information for each county in the State. Figure 9 on the following pages provides the location of each reporting facility in the State. The size of the facility location marker depicts the size of its on-site release relative to other facilities in the State. The facility location, telephone number, and contact person are provided in Appendix B.

### FIGURE 8

**TRI ON-SITE RELEASES REPORTED BY COUNTY**

### NEW CASTLE

**Air Releases = 2,910,710 Pounds**
**Water Releases = 511,478 Pounds**
**Land Releases = 733 Pounds**
**Total On-Site Releases =3,422,921 Pounds**
**213 Reports, 36 Facilities**
**41% of Statewide Releases**

### KENT

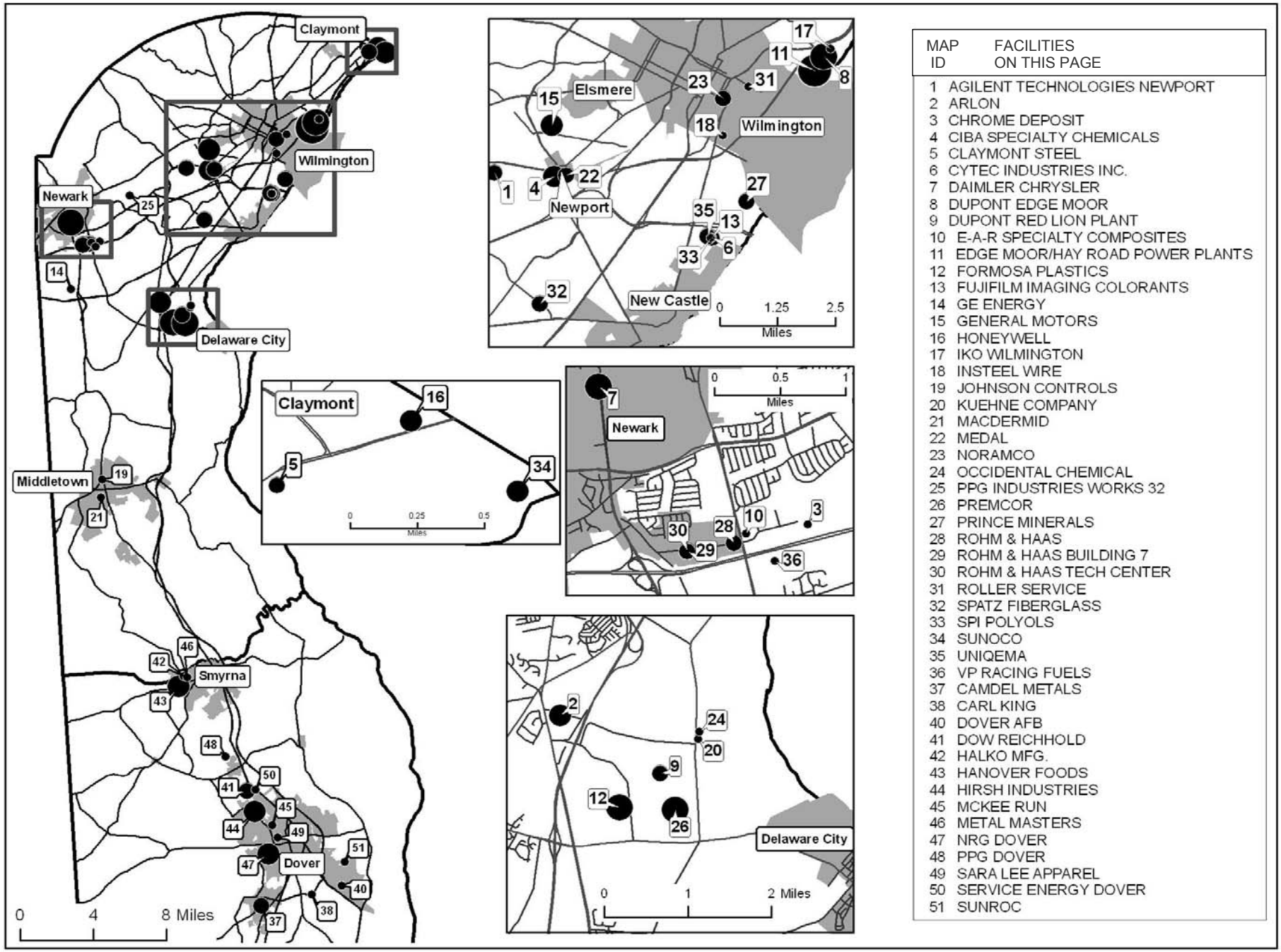
**Air Releases = 104,141 Pounds**
**Water Releases = 0 Pounds**
**Land Releases = 0 Pounds**
**Total On-Site Releases = 104,141 Pounds**
**50 Reports, 15 Facilities**
**1% of Statewide Releases**

### SUSSEX

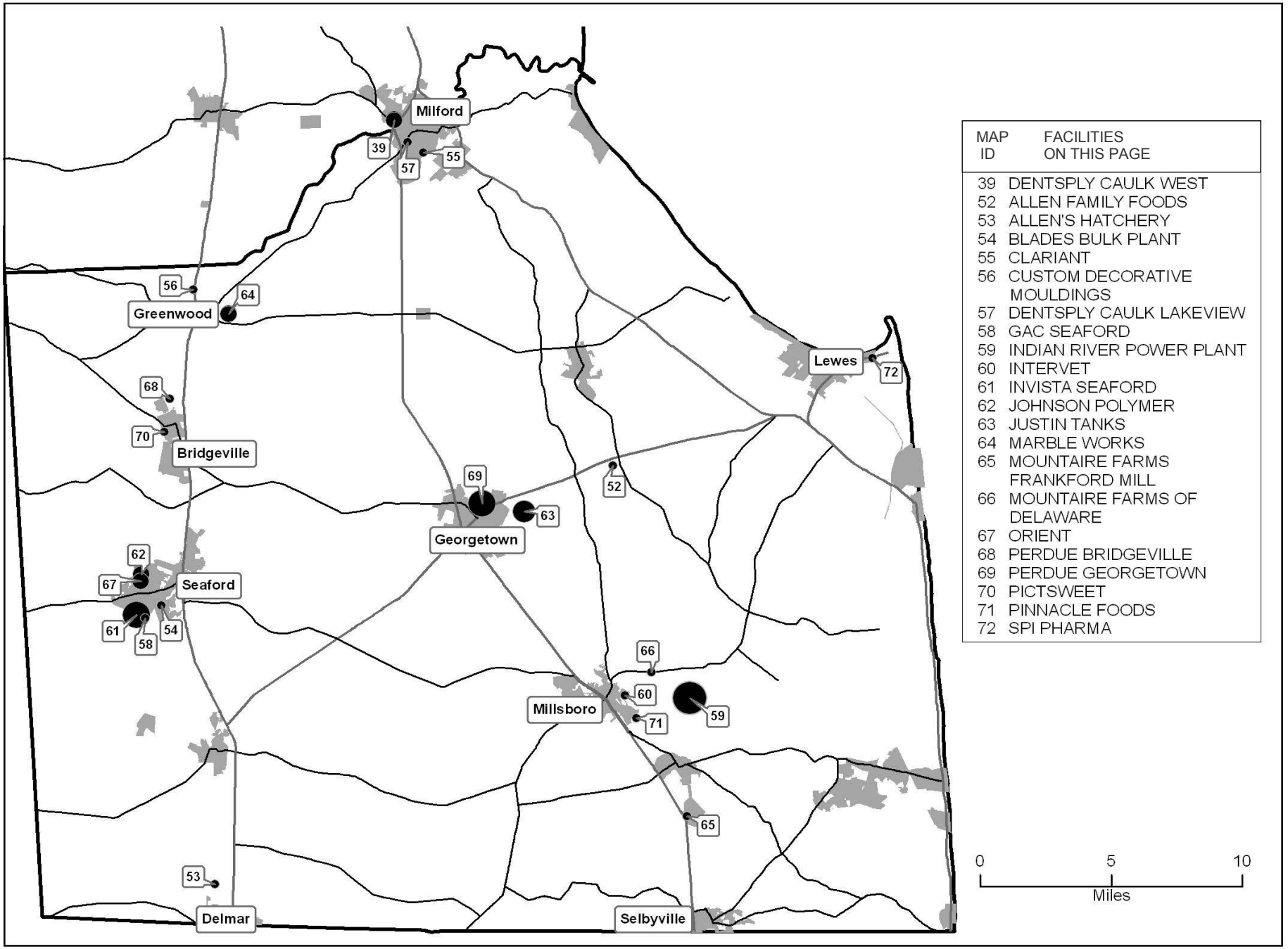
**Air Releases = 3,457,223 Pounds**
**Water Releases = 700,320 Pounds**
**Land Releases = 752,161 Pounds**
**Total On-Site Releases = 4,909,704 Pounds**
**83 Reports, 21 Facilities**
**58% of Statewide Releases**

Source: DNREC 2005 TRI Database 12-1-06

# FIGURE 9 TRI FACILITY LOCATOR MAP




| MAP ID | FACILITIES ON THIS PAGE |
|---|---|
| 1 | AGILENT TECHNOLOGIES NEWPORT |
| 2 | ARLON |
| 3 | CHROME DEPOSIT |
| 4 | CIBA SPECIALTY CHEMICALS |
| 5 | CLAYMONT STEEL |
| 6 | CYTEC INDUSTRIES INC. |
| 7 | DAIMLER CHRYSLER |
| 8 | DUPONT EDGE MOOR |
| 9 | DUPONT RED LION PLANT |
| 10 | E-A-R SPECIALTY COMPOSITES |
| 11 | EDGE MOOR/HAY ROAD POWER PLANTS |
| 12 | FORMOSA PLASTICS |
| 13 | FUJIFILM IMAGING COLORANTS |
| 14 | GE ENERGY |
| 15 | GENERAL MOTORS |
| 16 | HONEYWELL |
| 17 | IKO WILMINGTON |
| 18 | INSTEEL WIRE |
| 19 | JOHNSON CONTROLS |
| 20 | KUEHNE COMPANY |
| 21 | MACDERMID |
| 22 | MEDAL |
| 23 | NORAMCO |
| 24 | OCCIDENTAL CHEMICAL |
| 25 | PPG INDUSTRIES WORKS 32 |
| 26 | PREMCOR |
| 27 | PRINCE MINERALS |
| 28 | ROHM & HAAS |
| 29 | ROHM & HAAS BUILDING 7 |
| 30 | ROHM & HAAS TECH CENTER |
| 31 | ROLLER SERVICE |
| 32 | SPATZ FIBERGLASS |
| 33 | SPI POLYOLS |
| 34 | SUNOCO |
| 35 | UNIQEMA |
| 36 | VP RACING FUELS |
| 37 | CAMDEL METALS |
| 38 | CARL KING |
| 40 | DOVER AFB |
| 41 | DOW REICHHOLD |
| 42 | HALKO MFG. |
| 43 | HANOVER FOODS |
| 44 | HIRSH INDUSTRIES |
| 45 | MCKEE RUN |
| 46 | METAL MASTERS |
| 47 | NRG DOVER |
| 48 | PPG DOVER |
| 49 | SARA LEE APPAREL |
| 50 | SERVICE ENERGY DOVER |
| 51 | SUNROC |




| MAP ID | FACILITIES ON THIS PAGE |
|---|---|
| 39 | DENTSPLY CAULK WEST |
| 52 | ALLEN FAMILY FOODS |
| 53 | ALLEN'S HATCHERY |
| 54 | BLADES BULK PLANT |
| 55 | CLARIANT |
| 56 | CUSTOM DECORATIVE MOULDINGS |
| 57 | DENTSPLY CAULK LAKEVIEW |
| 58 | GAC SEAFORD |
| 59 | INDIAN RIVER POWER PLANT |
| 60 | INTERVET |
| 61 | INVISTA SEAFORD |
| 62 | JOHNSON POLYMER |
| 63 | JUSTIN TANKS |
| 64 | MARBLE WORKS |
| 65 | MOUNTAIRE FARMS FRANKFORD MILL |
| 66 | MOUNTAIRE FARMS OF DELAWARE |
| 67 | ORIENT |
| 68 | PERDUE BRIDGEVILLE |
| 69 | PERDUE GEORGETOWN |
| 70 | PICTSWEET |
| 71 | PINNACLE FOODS |
| 72 | SPI PHARMA |

FIGURE 9 TRI FACILITY LOCATOR MAP

TOXICS RELEASE INVENTORY

# SIC Industry Groups

Table 5 provides a description of each Standard Industrial Classification (SIC) industry group and the number of facilities in each group that reported in Delaware, along with the reported amounts for each SIC code. This table also provides on-site releases, off-site transfers, and wastes managed on-site for each group. The one reporting facility in the metal mining group, American Minerals, processes metal ores that they receive by railcar.

**TABLE 5**
**2005 TRI DATA BY PRIMARY SIC GROUP**

**(in pounds)**

| SIC CODE | INDUSTRY GROUP | NUMBER OF REPORTS | NUMBER OF FACILITIES | FORM A | FORM R | ON-SITE RELEASE | OFF-SITE TRANSFERS | ON-SITE WASTE MGMT. |
|---|---|---|---|---|---|---|---|---|
| 10 | Metal Mining | 4 | 1 | 0 | 4 | 2,915 | 0 | 0 |
| 20 | Food Products | 25 | 9 | 16 | 9 | 405,052 | 0 | 0 |
| 22 | Textiles | 3 | 1 | 2 | 1 | 3,218 | 595,112 | 4,320,113 |
| 24 | Lumber and Wood Products | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 | Furniture and Fixtures | 1 | 1 | 0 | 1 | 13,535 | 0 | 0 |
| 26 | Paper Products | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | Chemicals | 121 | 22 | 8 | 113 | 1,279,976 | 9,353,991 | 30,607,555 |
| 29 | Petroleum Refining and Products | 57 | 5 | 4 | 53 | 950,588 | 1,463,231 | 31,432,362 |
| 30 | Rubber and Plastics | 16 | 10 | 3 | 13 | 49,760 | 305,555 | 161,580 |
| 32 | Stone, Clay and Glass | 1 | 1 | 0 | 1 | 0 | 0 | 0 |
| 33 | Primary Metal | 12 | 3 | 0 | 12 | 20,811 | 2,297,858 | 0 |
| 34 | Fabricated Metal Products | 4 | 2 | 0 | 4 | 10 | 470,256 | 1,300 |
| 35 | Industrial Machinery and Equipment | 2 | 1 | 0 | 2 | 0 | 6,100 | 0 |
| 36 | Electronic Equipment, except Computers | 2 | 2 | 0 | 2 | 108 | 4,794,273 | 0 |
| 37 | Transportation Equipment | 29 | 3 | 1 | 28 | 285,272 | 443,894 | 146,586 |
| 38 | Measuring Instruments, Medical/Optical | 6 | 2 | 0 | 6 | 2,255 | 48,991 | 0 |
| 39 | Miscellaneous Manufacturing | 1 | 1 | 0 | 1 | 2,879 | 0 | 0 |
| 4911 | Oil and Coal Fired Power Plants | 43 | 4 | 1 | 42 | 5,420,379 | 304,275 | 1,372,627 |
| 5171 | Wholesale Petroleum Terminals | 18 | 3 | 18 | 0 | 0 | 0 | 0 |
| 97 | National Security | 1 | 1 | 0 | 1 | 8 | 0 | 0 |
| | TOTAL | 346 | 72 | 53 | 293 | 8,436,766 | 20,083,537 | 68,042,123 |

**FIGURE 10**
**2005 ON SITE RELEASES**
**BY PRIMARY SIC GROUP**

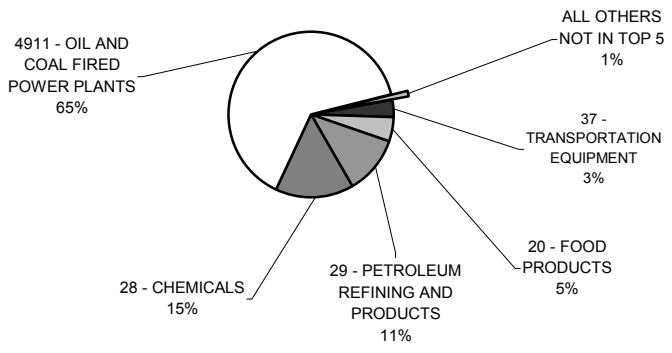



Figure 10 shows the relative contribution of each of the top five SIC groups and all others not in the top five to the reported total on-site releases. Three of these top five - SIC groups 4911 (Oil and Coal Fired Power plants), 29 (Petroleum refining), and 28 (Chemicals) combined for 91% of the total on-site releases within the State. Facilities not in the top five SIC industry groups reported contributions of only 95,500 pounds on-site, or 1.1% of the on-site release total. Starting with the 2006 reporting year, NAICS (North American Industry Classification System) codes will replace the SIC codes.

# RELEASES FROM THE TOP 15 FACILITIES

Figure 11 shows the relative contribution of each of the top 15 reporting facilities to on-site releases. The top four facilities are, or have as a significant portion of their facility, an energy generating operation. Of the 8,436,766 pounds that were reported released on-site by all 72 facilities Statewide, the top 15 facilities accounted for 8,319,344 pounds, or 98.6% of the total on-site releases.

**FIGURE 11**
**2005 ON-SITE RELEASES**
**TOP 15 FACILITIES**

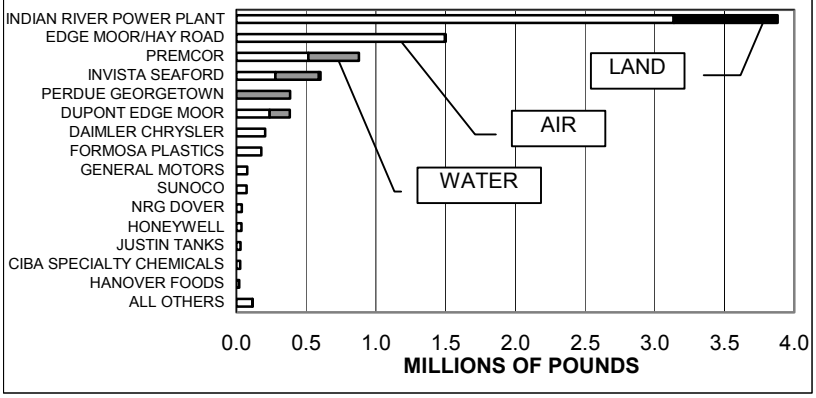



**TABLE 6**
**TOP 15 FACILITIES 2004 AND 2005 RANKING BY ON-SITE RELEASE**
**(in pounds)**

| 2004 RANK | 2005 RANK | FACILITY | 2005 TOTAL AIR | 2005 TOTAL WATER | 2005 TOTAL LAND | 2005 TOTAL ON-SITE RELEASE | 2004 TOTAL ON-SITE RELEASE | 2004 TO 2005 CHANGE IN RELEASES | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | INDIAN RIVER POWER PLANT | 3,135,357 | 4,820 | 741,095 | 3,881,272 | 4,805,887 | -924,615 | -19% |
| 2 | 2 | EDGE MOOR/HAY ROAD POWER PLANTS | 1,494,761 | 5,535 | 0 | 1,500,296 | 1,654,288 | -153,991 | -9% |
| 3 | 3 | PREMCOR | 515,834 | 361,516 | 0 | 877,350 | 1,463,860 | -586,510 | -40% |
| 4 | 4 | INVISTA SEAFORD | 280,843 | 310,500 | 10,976 | 602,319 | 752,293 | -149,974 | -20% |
| 5 | 5 | PERDUE GEORGETOWN | 0 | 385,000 | 90 | 385,090 | 370,100 | 14,990 | 4% |
| 7 | 6 | DUPONT EDGE MOOR | 239,177 | 143,377 | 0 | 382,554 | 325,714 | 56,840 | 17% |
| 6 | 7 | DAIMLER CHRYSLER | 206,164 | 0 | 0 | 206,164 | 360,124 | -153,960 | -43% |
| 9 | 8 | FORMOSA PLASTICS | 179,118 | 12 | 0 | 179,130 | 126,313 | 52,818 | 42% |
| 10 | 9 | GENERAL MOTORS | 79,108 | 0 | 0 | 79,108 | 84,181 | -5,073 | -6% |
| 12 | 10 | SUNOCO | 73,078 | 0 | 0 | 73,078 | 44,011 | 29,067 | 66% |
| 11 | 11 | NRG DOVER | 38,811 | 0 | 0 | 38,811 | 44,011 | -5,200 | -12% |
| 8 | 12 | HONEYWELL | 36,230 | 0 | 0 | 36,230 | 131,457 | -95,228 | -72% |
| 14 | 13 | JUSTIN TANKS | 30,062 | 0 | 0 | 30,062 | 21,176 | 8,886 | 42% |
| 13 | 14 | CIBA SPECIALTY CHEMICALS | 28,120 | 0 | 0 | 28,120 | 32,361 | -4,241 | -13% |
| 19 | 15 | HANOVER FOODS | 19,760 | 0 | 0 | 19,760 | 11,500 | 8,260 | 72% |
| | | **ALL OTHERS** | **115,651** | **1,038** | **733** | **117,422** | **120,827** | **-3,404** | **-3%** |
| | | **TOP 15** | **6,356,423** | **1,210,760** | **752,161** | **8,319,344** | **10,227,274** | **-1,907,930** | **-18.7%** |
| | | **STATE TOTALS, ALL FACILITIES** | **6,472,074** | **1,211,798** | **752,894** | **8,436,766** | **10,348,101** | **-1,911,335** | **-18.5%** |

Source: 2004 and 2005 DNREC TRI Databases, December 1, 2006

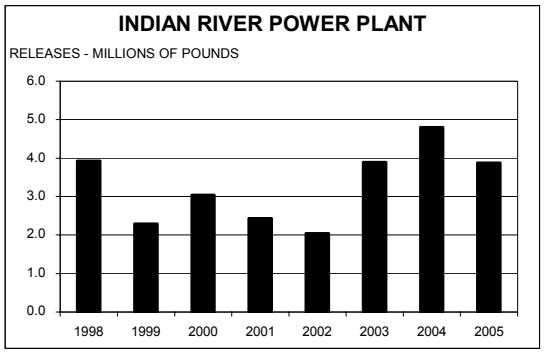
Table 6 shows the 2005 ranking of the top 15 facilities along with their 2004 ranking and the reported amounts of on-site releases for both years. Releases to the environment because of remedial actions, accidents, or one-time catastrophic events are included in these values. The percent change in total on-site releases for each of the top 15 facilities from 2004 to 2005 is also shown, and some of these changes are significant. Changes at the facility, such as the way releases are estimated, how waste is managed, changes in raw materials or processing methods, or installation of new or improved production equipment possibly used to limit or eliminate releases of all or specific chemicals, may affect reported releases. Changes in production amounts may or may not affect releases from a facility. Details for some of these changes are provided on the following pages. Interested individuals are also encouraged to contact facilities and inquire as to the reasons why changes occurred.

The next several pages present a brief description of each of the top 15 facilities to provide an understanding of the use and importance of some of the TRI chemicals and basic operations at these facilities. As in Table 6, this rank for the 2005 reporting year is based on total reported on-site releases. The facility description explains the general types of products manufactured at the facility and how their TRI chemicals relate to the products and the overall plant operation. The graph included with the facility description shows the trend of the facility total on-site releases since 1998, the date of the last major TRI reporting revision. The graph for each facility includes all chemicals, including the newly reportable chemicals, which have been reported by the facility. Comparisons must be made carefully as the **scales on each of the facility graphs will be different.** Appendix C provides a complete list of 2005 on-site release data grouped by facility and chemical.

The DNREC TRI program visits facilities statewide during the year to get a better understanding of operations at the facilities, discuss TRI issues such as data quality that may have developed in the course of reporting, and to introduce new facilities and\or facility coordinators to the TRI program and its reporting requirements. Fourteen visits were conducted during the 2005 reporting year.

Although the TRI program itself has no limits for emissions, other DNREC and Federal programs do issue permits and limit emissions from operating facilities.

**Rank #1 – NRG Indian River Power Plant** - Oil and coal-fired power plants were required to report under TRI for the first time in the 1998 reporting year. This 784 megawatt facility, located near Millsboro, produces electricity, primarily from the combustion of coal.

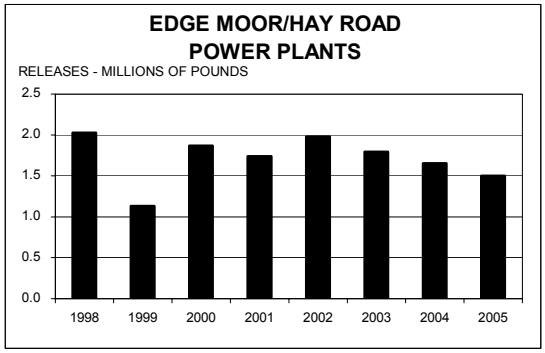



The Indian River Plant reported on nineteen TRI chemicals for 2005. Ten of these were metal compounds, three were non-metallic PBTs, three were acid gases and the remaining three were ammonia, arsenic compounds, and naphthalene. All the compounds except ammonia are formed during the combustion process as a result of impurities within the coal and oil. Coal consumption increased 13% in 2003, 25% in 2004, and 16% in 2005 based on amounts of energy generated. TRI releases were in line with these increases in 2003 and 2004, but in 2005, the releases decreased 19% due to Powder River Basin (PRB) coal and other lower sulfur coals that the plant was test burning. Chlorine and sulfur produce sulfuric and hydrochloric acid gases, and PRB coal is lower in sulfur and chlorine.

Beginning in 2003, actual stack sample data (as compared to EPA emission factor methods) were used to calculate hydrochloric acid gas releases. These methods were applied to the entire year, and this resulted in significantly higher release amounts for hydrochloric acid gas for 2003 and 2004. In 2005, coal analysis and the 2003 stack test emission factors were used to calculate the hydrochloric acid gas release. This gave a more representative total release for the year because it represents all the data for the year, not just the data collected during a single stack test run on regular coal. Acid gasses, such as hydrochloric acid, sulfuric acid, and hydrofluoric acid, accounted for 80% of the facility's on-site releases in 2005.

On-site mercury releases decreased again in 2005. Starting in 2004, coal analysis data and emission factors were used to calculate metal compound releases. Mercury total on-site releases decreased to 205 pounds down from 241 pounds in 2004 and 395 pounds in 2003. Metal compounds, formed as a result of impurities in the coal, are largely captured (97%) in the fly ash and bottom ash and sent to an on-site landfill. The metallic compounds accounted for 19% of the facility on-site releases and decreased 18% in 2005 because the lower sulfur coals tested also contained lower concentrations of metals. Again, current coal analysis data is used as a basis for calculating releases. Ammonia is released in the power production process solely from the use of urea, a pollution control agent used in Selective Non-Catalytic Reduction (SNCR) technology for limiting the formation of oxides of nitrogen to the atmosphere. Ammonia on-site release doubled in 2004 and increased 7% in 2005, the result of increased generation and associated utilization of the SNCR system. Naphthalene is in the oil consumed at the facility. Arsenic compounds are generated as a result of coal combustion and are sent to the on-site landfill.

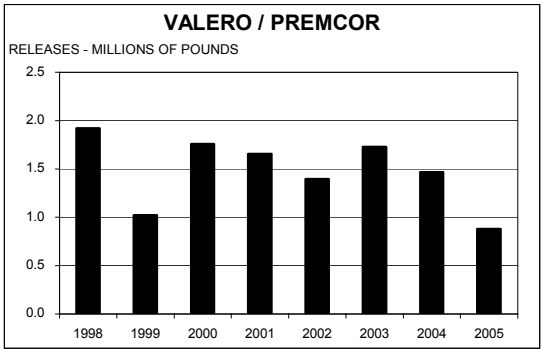
**Rank #2 - Edge Moor/Hay Road Power Plants** - Oil and coal-fired power plants were required to report under TRI for the first time in the 1998 reporting year. The Edge Moor/Hay Road facilities are located along the Delaware River, a mile north of the Port of Wilmington, and produce electricity from the combustion of coal, oil, and natural gas.




The Edge Moor/Hay Road power plants reported on eighteen TRI chemicals for 2005. These facilities reported three acid gases, nine metal compounds, four non-metallic PBTs, nitrate compounds, and ammonia. Acid gas emissions -- hydrochloric acid, hydrogen fluoride and sulfuric acid -- accounted for 98% of on-site releases. Most TRI chemical releases, including mercury compounds, ammonia, hydrochloric and hydrogen fluoride acid gasses, decreased because of a change in the ratio of oil to coal used in the different generating units, and a small reduction in energy generated. Overall, on-site releases decreased 9% compared to 2004 and are now 74% of the facility's 1998 level.

The Edge Moor/Hay Road Power Plants reported increases in on-site releases in lead, manganese, and nickel compounds, the result of variation in infrequent water analyses (one per quarter) weighted over the entire year. All listed compounds except ammonia are formed during the combustion process because of impurities within the fuel. Ammonia is released from the Edge Moor facility solely from the use of urea, a pollution control agent used for limiting the formation of oxides of nitrogen to the atmosphere. Ammonia is also used at the Hay Road facility for pollution control. About 89% of the metal compounds are largely captured in the fly ash and bottom ash. Generally, 100 percent of the captured ash is beneficially reused. It is used, for example, as an additive in concrete, as landfill stabilizer, as flowable fill in construction projects and as a base for road construction. The remaining 11% of metals not captured in ash was released on-site to air and water, or sent off-site to recycle or wastewater treatment, and accounted for 2% of their total on-site releases.

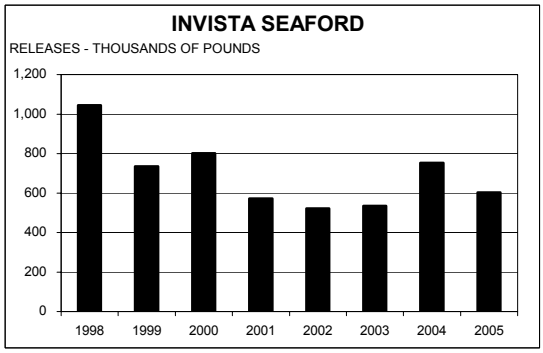
**Rank #3 – Valero / Premcor -** The Valero Refinery, located in the Delaware City industrial complex, refines crude oil into automobile gasoline, home heating oil, and a variety of other petroleum products. The facility, previously known as Motiva, changed ownership to Premcor on May 1, 2004 and changed ownership to Valero on September 1, 2005. The 2005 data presented in this report were prepared under Valero ownership.




Valero reported on 45 TRI chemicals for 2005. The total facility-reported on-site releases decreased 40% in 2005 and have decreased 54% since 1998. Reported releases of ammonia declined by 198,000 pounds (84%) in 2005, the result of fewer boiler outages and updated analytical results and calculation methodologies. Reductions of 104,000 pounds (76%) for hydrochloric acid and 11,000 pounds (57%) for propylene were also reported in 2005, also the result of updated analytical results and calculation methodologies. Sulfuric and hydrochloric acids are formed as acid gases in several units at the facility, including the fluid coker, fluid cat cracker, and the on-site power plant that combusts oil and gas. Sulfuric acid gas, almost unchanged at 99% of the 2004 release amount, accounted for 29% of Valero's total on-site releases and 50% of all Valero on-site air releases in 2005. Reported hydrogen cyanide and cyanide compounds each decreased by 12,000 pounds. These decreases were the result of updated analytical results and calculation methodologies. Reported releases of methanol decreased 10,000 pounds (53%). This is primarily due to the phase-out of MTBE as an additive in gasoline blends. The on-site landfill has been closed and disposals associated with this area, primarily metallic compounds, have been converted almost entirely to off-site recycle activities.

The above changes, along with other smaller increases and decreases, resulted in a net decrease of 586,500 pounds (40%) in on-site releases for the facility in 2005.

**Rank #4 – INVISTA / DuPont Seaford** - This facility was the first plant worldwide to produce spun nylon fibers, beginning operations in 1939. The spun nylon is used in the apparel industry, in carpeting, and other fabrics applications. The facility also produces nylon flake for export. The facility changed ownership from Dupont to INVISTA on May 1, 2004. The data prepared for the 2005 report was done under INVISTA ownership.



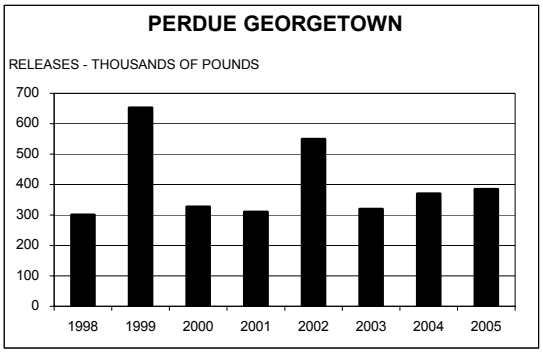

The INVISTA facility reported on 13 TRI chemicals for 2005. Of the 13 TRI chemicals reported, 98% of the on-site releases were comprised of three chemicals: hydrochloric and sulfuric acid aerosols (released to air) and nitrate compounds (released to water). Combustion of coal in the INVISTA power plant produces hydrochloric and sulfuric acid aerosols released to air from the stacks. The coal contains small amounts of chlorine and sulfur-containing compounds that convert to acid gases in the

combustion process. Nitrate compounds are formed during treatment of nylon process wastewater in the on-site biological wastewater treatment plant.

Total on-site releases declined by about 80,200 pounds (12%) since 2004. The INVISTA facility reported a 9% decrease in on-site releases of nitrate compounds and a 20% decrease in hydrochloric acid aerosols in 2005. This was the result of an 8% decrease in production and corresponding decreases in coal usage and wastewater flow. Lower coal usage and lower chlorine content in the coal resulted in decreased values for hydrochloric acid aerosol emissions. Lower water usage and sample variability resulted in decreased amounts reported for nitrate compounds. The production decrease did not result in significant changes to the other reported chemicals.

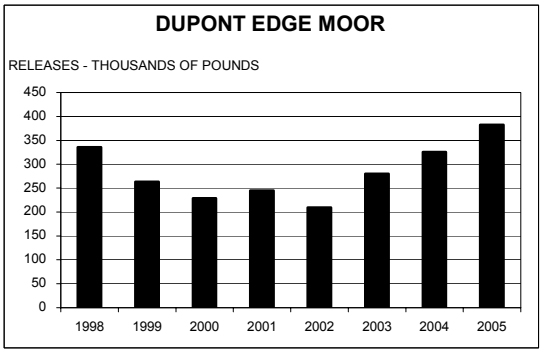
**Rank #5 - Perdue Farms Georgetown** - Perdue Farms is a producer of poultry products. The Georgetown facility processes chickens for sale to the retail market.

Perdue Georgetown reported on three TRI chemicals for 2005. Over 99% of the on-site releases were nitrate compounds. The Perdue wastewater treatment plant digests ammonia and production waste from the poultry processing plant's wastewater stream and converts some of these wastes to nitrate compounds. On-site releases increased by 15,000 pounds (4%) in 2005.




Nitrate compound volume at Perdue's wastewater treatment plant peaked in 1999 when new government-mandated poultry processing plant procedures dramatically increased the amount of water required to process chickens. Improvements in the wastewater treatment plant operation cut nitrate releases by more than 50 percent in 2000 and 2001, but these amounts have varied in recent years because of changes in the way the amount of nitrate compounds releases are estimated. In 2003, nitrate compound on-site release decreased by 42%, the result of additional water recycle projects. In 2004, a production increase accounted for the increase, and in 2005, production was 4% greater than 2004, which correlates with the increase in the on-site release amount.

**Rank #6 – DuPont Edge Moor** - The Edge Moor Plant is one of three domestic DuPont facilities that manufactures titanium dioxide, a white pigment that is used in the paint and paper industries. The facility also produces titanium tetrachloride and ferric chloride. The plant is located along the Delaware River a few miles north of the Port of Wilmington.

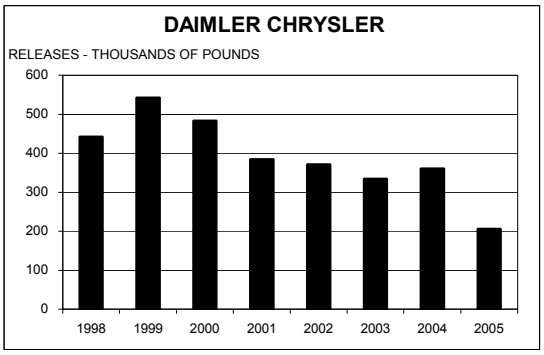



DuPont Edge Moor reported on 21 TRI chemicals for 2005. Carbonyl sulfide accounted for 60% of their total on-site release amounts, and manganese compounds accounted for 34%. Carbonyl sulfide is a by-product produced from the use of sulfur-bearing coke in the process of manufacturing the titanium dioxide from titanium-

rich ores. Manganese compounds are also by-products produced from the ores during the manufacturing process. Although production increased 3% in 2005, production of carbonyl sulfide increased by 7%, and production of manganese compounds increased 44%, causing a net increase in total on-site releases of 18%.

Also, dioxins and dioxin-like compounds are created as a result of ore processing. Over 99.99% of the dioxins generated are contained within the solid material sent to an out-of-state landfill facility. DuPont has made a public commitment to reduce generation of dioxin and dioxin like compounds by 90% by 2007, compared with 2001 levels. Through 2005, generation of dioxin and dioxin-like compounds has been reduced by approximately 77% from 2001 levels by making process modifications. A major capital project is now underway to provide further reductions and permit DuPont to meet its goal.

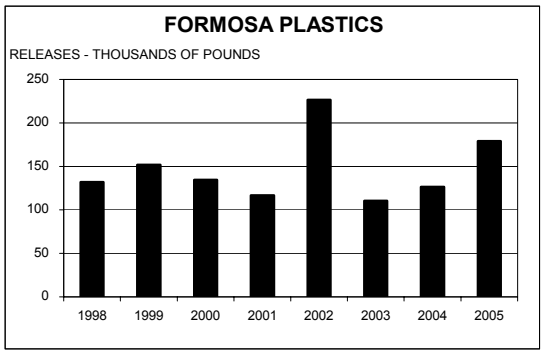
**Rank #7 - DaimlerChrysler Newark Assembly Plant** - DaimlerChrysler assembles the Dodge Durango SUV for distribution to dealers.




DaimlerChrysler reported on 17 TRI chemicals for 2005. All on-site releases were to the air. Many of these are solvents used in paints or for parts cleaning, while others are materials that are incorporated into the cars themselves, such as ethylene glycol (antifreeze) and n-hexane (gasoline). The vehicle body coating process makes use of 1,2,4-trimethylbenzene, certain glycol ethers, methyl isobutyl ketone, n-butyl alcohol, and xylene. Some of these materials are also used elsewhere in the facility. In total, these chemicals accounted for approximately 86% of the DaimlerChrysler on-site releases in 2005. DaimlerChrysler accounted for about 84% of certain glycol ethers, 53% of 1,2,4-trimethyl-benzene and 21% of all xylene leases in the state in 2005.

This facility had a production decrease of 32% because of a model changeover in 2005, but the on-site releases decreased 43% because vehicle painting operation efficiencies increased as a result of block painting, or grouping several vehicles of the same color together, to reduce the frequency of color switching and the associated solvent purge.

**Rank #8 - Formosa Plastics** - Formosa Plastics, located in the Delaware City complex, produces polyvinyl chloride (PVC) resin for bulk sale to other industries that produce PVC based products, such as containers, flooring, carpet backing, upholstery, toys, and gloves.



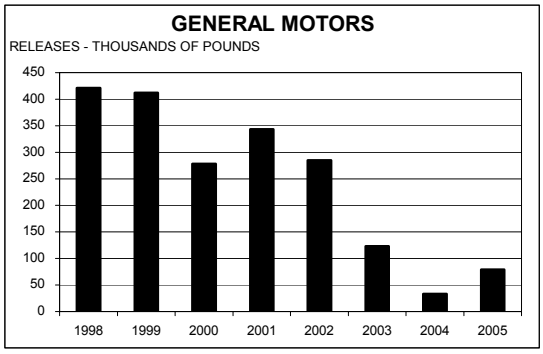

Formosa reported three TRI chemicals for 2005. Vinyl chloride monomer (VCM) accounted for 40% of their on-site releases. VCM is the primary ingredient for producing PVC and is released as residual unreacted monomer during the drying process of the PVC resin. Permits regulate the concentration of the residual monomer in the PVC before drying.

Vinyl acetate accounted for 25% of Formosa's on-site releases. Vinyl acetate is also a raw material used in certain products and is released through the drying process. Ammonia is also used in several of Formosa's products and is released during the PVC drying process. Ammonia accounted for 35% of Formosa's on-site releases.

Formosa Plastics initiated better process monitoring and control in 2003 that reduced vinyl chloride emissions by 39% and vinyl acetate emissions by 67%. In 2004, on-site releases were higher by 15% compared to 2003, the direct result of a production increase. For 2005, on-site releases were up 42%. The method used to estimate the ammonia release was changed to an improved method that, along with a 35% production increase, resulted in a significantly higher estimated amount. Ammonia accounted for 86% of the total increase in on-site releases. The vinyl chloride release increased 2,800 pounds (4%) because of an accidental release, and vinyl acetate increased 3,700 pounds (9%) because of increased residual vinyl acetate.

Formosa started using a new basis on which to estimate vinyl acetate releases in 2002, so direct comparison of 2002 and later years with prior years is not possible.

**Rank #9 – General Motors Wilmington Assembly Plant** - General Motors assembles Pontiac Solstice and Saturn Sky automobiles for distribution to dealers; and the Opel GT for export to Europe.



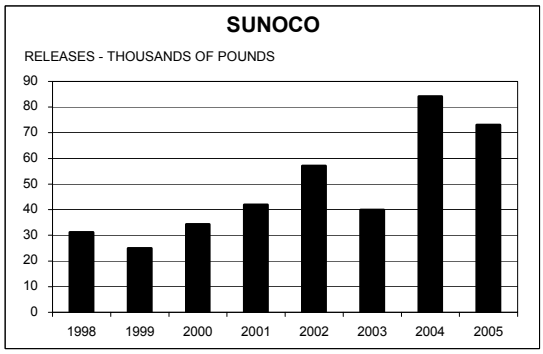

GM reported on 11 TRI chemicals for 2005. Many of these are solvents (certain glycol ethers, xylene) used in paints or for parts cleaning, while others are materials that are incorporated into the cars themselves, such as ethylene glycol (antifreeze). All on-site releases reported by GM were to the air. Xylene, certain glycol ethers, and 1,2,4-trimethylbenzene are paint solvents used in both the base and top coats and accounted for 96% of on-site releases in 2005. General Motors accounted for about 4% of certain glycol ethers, 42% of 1,2,4-trimethylbenzene, and 53% of all xylene releases in the state in 2005.

Although 2005 production was 70% of the 2004 level, on-site releases were 140% higher in 2005. During 2005, the plant underwent a significant model change-over in which chemicals identical to those used in production were used for cleaning, filling of bulk tanks, removal and replacement of chemicals in large systems, etc. The increase in xylene and 1,2,4-trimethylbenzene emissions can be attributed to the usage of purge cleaning solvent in preparing the paint systems to receive the new colors for the Pontiac Solstice. During such change-over activities, actual production is curtailed, causing the inverse relationship of less production and higher reported releases.

**Rank #10 – Sunoco Refining and Marketing** – The Sunoco facility, located in Marcus Hook, PA, also extends its facility into the North Claymont area of Delaware. The Marcus Hook facility can process 175,000 barrels a day of crude oil into fuels – including gasoline, aviation fuel, kerosene, heating oil, residual fuel, propane and butane, and petrochemicals. The major

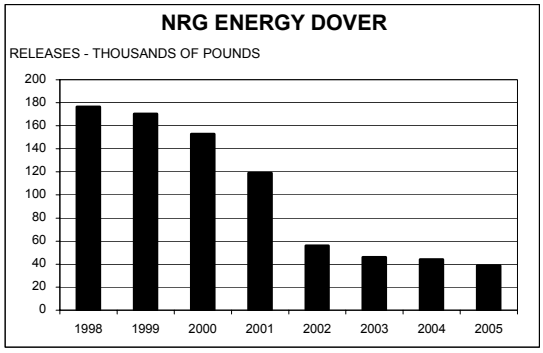
petrochemicals are benzene, toluene, xylene, cyclohexane, propylene, ethylene, and ethylene oxide; these are sold to chemical companies, which use them to make a variety of other products.

The portion of the Sunoco facility in Delaware reported four TRI chemicals in 2005. Ethylene and ethylene oxide account for 93% of the total on-site Delaware releases, and smaller amounts of benzene and xylene were also reported as released to air from tanks in Delaware.




The primary reason for the upward trend in 2004 was the large increase in the reported amount of ethylene released. This increase was the result of an improved method used to determine plant fugitives. Changes in production levels were not a factor in the changes in 2004. For 2005, emissions decreased by 16%. This is primarily due to decreased production of ethylene and ethylene oxide and faster equipment leak repair time.

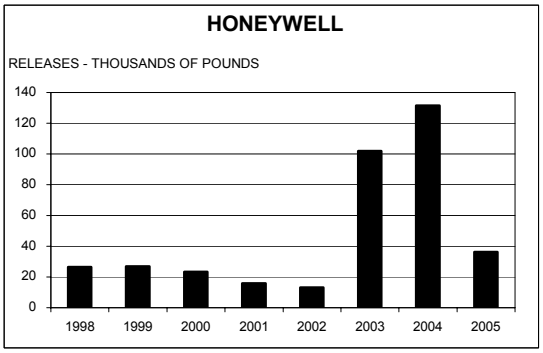
**Rank #11 - NRG Dover Plant** - Oil and coal-fired power plants were required to report under TRI for the first time in the 1998 reporting year. This facility, located on the West side of Dover, produces electricity primarily from the combustion of coal.




The NRG Dover Plant reported on four TRI chemicals for 2005. Two of these were acid gases - hydrochloric acid and sulfuric acid - formed during the combustion process. Acid gas releases accounted for over 99% of the facility on-site releases. Small amounts of metal compounds are also formed during combustion because of metallic impurities in the coal and are largely (97%) captured in the fly ash and bottom ash and sent to an off-site landfill.

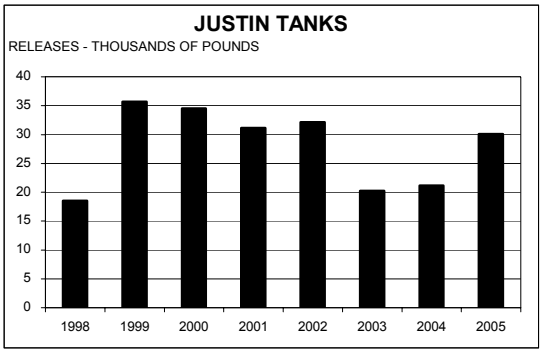
The decrease in the 2002 reported releases was the result of using actual coal mine data as a basis for estimating releases of hydrochloric acid aerosols. This new basis reduced the reported release of hydrochloric acid by 65% (63,000 pounds) in 2002, and the hydrochloric acid release amount was nearly the same for 2003. The sulfuric acid release in 2003, however, was lower by 47%, the result of applying a coal mine coal cleaning factor which was included for the first time that year. For 2005, production increased by 4% while reported releases decreased by 12%. This reduced release amount was because of the lower sulfur content in coal purchased in 2005, which resulted in a 38% reduction in the reported sulfuric acid release.

**Rank #12 – Honeywell International -** Honeywell, located in Claymont adjacent to the now-closed General Chemical facility and Sunoco, manufactures specialty chemicals that are used in agricultural, pharmaceutical, and household products. This facility also produces boron trifluoride, used in the production of hydrocarbon resins, lubricants, and adhesives.




The Honeywell facility reported on eleven TRI chemicals in 2005. Releases of ammonia and n-hexane, used in production of caulking, accounted for about 94% of their total on-site releases. Although production increased 17% in 2003, the primary reason for the increase in the reported amount that year was that Honeywell performed stack testing and is now using this more accurate basis for estimating releases. In 2004, production increased 31% and the increase in on-site releases is a direct result of the production increase. Honeywell has completed a two phase emission control project that decreased on-site emissions by 72% even with a 2005 production increase of 11%. In the 2006 report year Honeywell will be reporting the full year impact of the completed emission reductions project.

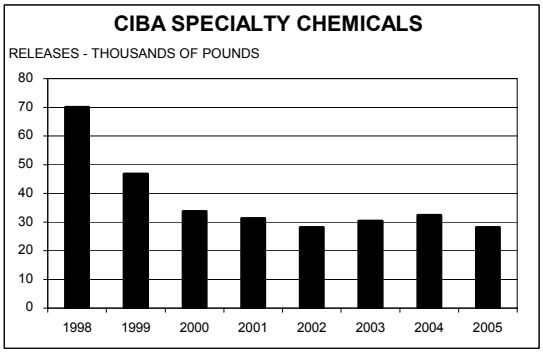
**Rank #13 – Justin Tanks** – Justin Tanks, located in Georgetown, manufactures a wide variety of Fiberglass Reinforced Plastic (FRP) tanks for use in the chemical, agricultural, and food industries.



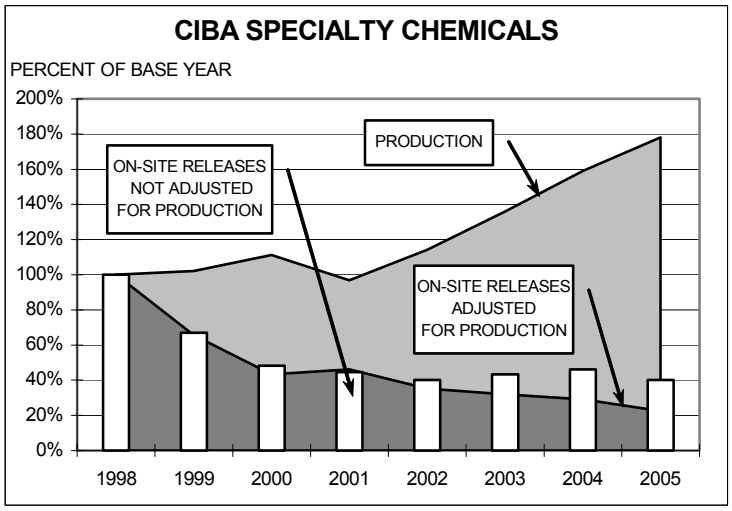

Justin reported on one TRI chemical, styrene, for 2005. Styrene is used as a monomer in the polymerization of fiberglass resin. The majority of the styrene is released to the air during the application process of fiberglass to the tank. During polymerization and curing, the amount of styrene release diminishes to zero at full cure. No release occurs after the tank polymerization and curing process is complete.

On-site releases increased 42% over 2004. This resulted from an increase in production and a product mix utilizing equipment with higher ratios of styrene release during the application process. Justin Tanks is scheduling equipment improvements in 2006, to reduce styrene releases during the application process.

**Rank #14 – Ciba Specialty Chemicals -** Ciba Specialty Chemicals is located in Newport. Ciba manufactures pigments for the paints, plastic, and printing industries. They reported on eight TRI chemicals for 2005. All on-site releases were to air.



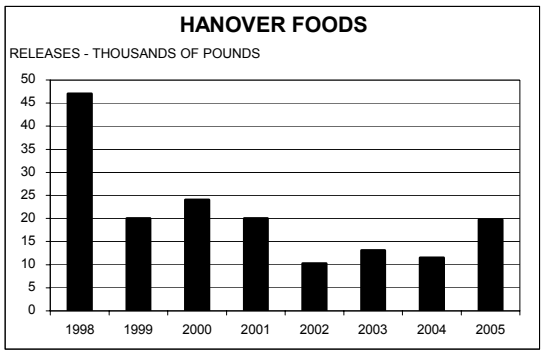

Methanol was the predominant chemical released on-site in 2005 (94% of total on-site releases). Methanol is used as a reactant and a solvent in the pigment manufacturing process. A significant portion of methanol used at the facility is recycled. Total pigment production remained relatively flat in 2005 vs. 2004. Overall, on-site releases fell by 13% due to a different pigment assortment manufactured. Ciba has expanded and modernized their facility since 1998. Although facility production has increased significantly since



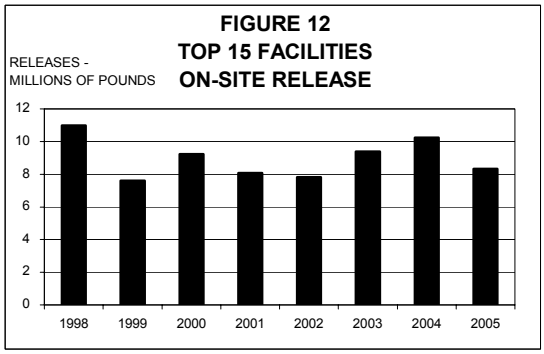

1998, Ciba has achieved a 60% reduction in on-site releases during this time. Ciba has also reduced transfers off-site of methanol to water treatment by 70% since 1998.

This second Ciba graph shows the relationships between actual on-site releases (bars), production (light area), and on-site releases based on units of production (dark area) starting with a 100% reference point in 1998. This graph shows that releases for each unit of production fell over the time period because although production increased significantly, on-site releases were controlled to relatively constant amounts year-to-year.

**Rank #15 – Hanover Foods -** Hanover Foods produces a variety of fresh, frozen, refrigerated, and canned vegetables, entrees, and snack foods. Customers for these products are the retail, foodservice, private label, military, club store, and industrial markets.




Located in Clayton, the facility freezes fresh vegetables including corn, peas, lima beans, spinach, and mushrooms, and packages frozen entrees. Hanover reported only ammonia releases for the past several years. This was primarily due to leaks and other losses in their refrigeration equipment. In recent years, the increases and decreases ammonia releases reflect the level of production. In 1999, an agreement with DNREC's Emergency Planning and Response Branch was reached to reduce ammonia releases to no more than 14,000 pounds per year. However, since the expiration of the agreement, ammonia releases have increased. In 2005, production increased 50% but the reported ammonia release increased 72% to 19,760 pounds. DNREC is investigating this reported increase and suspects that a recent system inventory increase may not have been properly accounted for.



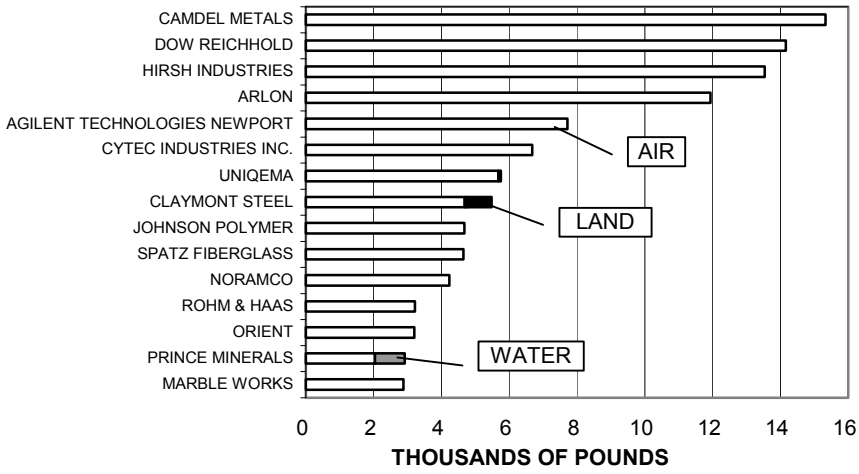

**Combined Top 15 Facilities Trend –** Figure 12 shows the totals for reported on-site releases for the top 15 facilities during 1998-2005. These facilities represent over 98% of the total on-site releases in the State for 2005. Six facilities had increases in 2005, the largest being DuPont Edgemoor (#6). Nine facilities had decreases, the most notable being the Indian River Power Plant (#1). The total on-site release trend for these 15 facilities is down 24% since 1998. All newly reportable chemicals are included in the

data shown on this graph and the ones for the individual facilities. Additional trends will be presented later in this report, and some of these trends take into account the new reporting requirements.

## Releases from the Second 15 Facilities

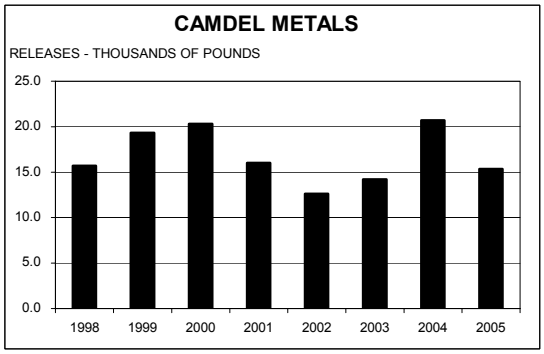
As with the first 15 facilities, a brief description of the second 15 facilities is presented on the next several pages. Although the Second 15 group of facilities released a much smaller amount of TRI chemicals on-site, their operations are an important part of the Delaware economy. Again, the ranking is based on the total facility reported on-site release. Releases to air constitute about 98.4% of the second 15 group total on-site release, while releases to water and land each contribute less than 1%. Figure 13 shows the relative portions released to air, water, and land by each of the second 15 facilities.

**FIGURE 13**
**2005 ON SITE RELEASES REPORTED BY SECOND 15 FACILITIES**




In comparing facility rankings and release amounts with prior years' data, you may note that some facilities have reduced their on-site releases but their rank did not change. This is because of the general downward trend of this group (12 decreases, two increases, and one facility new to the group, Rohm & Haas, #31 last year). In addition, some facilities may move to another group or out of the top 30 entirely. These facilities may be replaced by other facilities that have lower release amounts. Individual facilities that remain in the group must keep pace with this downward trend and effect their reductions at a similar rate in order to maintain their rank. In some cases, significant reductions result in little, if any change in rank, and no change or a small reduction in release may result in an increase in rank.

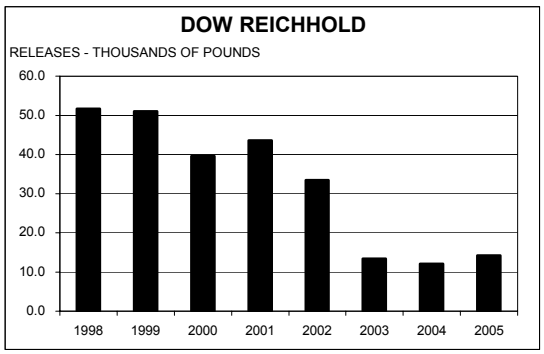
**Rank #16 - Camdel Metals -** Camdel Metals Corporation specializes in the production of seamless & welded stainless steel coiled and straight-length tubing. These tubes have been produced for numerous petrochemical applications, process construction, general control systems, instrumentation, medical, military, oil & gas, down-hole and sub-sea umbilical applications. Camdel produces the world's longest continuous seamless coils which can be in excess



of 5,000 feet. The tubing ranges in size from 0.020 to 3/4 inch diameter. Some types (welded) may be supplied in coils as long as 25,000 feet.

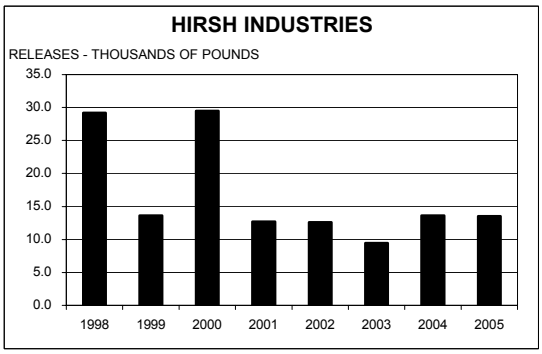
Trichloroethylene is the primary TRI chemical reported by Camdel Metals, and makes up 100% of the on-site release amount. It is used as a solvent to clean the tubing. Production increases in 2003 (15%) and 2004 (27%) accounted for most of the on-site release increases over 2002, and releases generally tracked production. Although production-related activities for trichloroethylene fell 6% in 2005, trichloroethylene releases fell by 26%, the result of improved process management.

**Rank #17 – Dow Reichhold** – Dow Reichhold is located two miles south of Cheswold. Dow Reichhold produces emulsion polymers, sometimes referred to as latex. These products are sold in bulk liquid form and are used in the manufacture of synthetic fuels, nitrile rubber gloves, textiles, and other specialty products.




Dow Reichhold reported on ten TRI chemicals in 2005. Most of these are raw materials used to form the emulsion polymers, and 35% of on-site releases were of 1,3-butadiene, whose 2005 on-site release was 18% of its 1998 level. Pollution control equipment captured most of the residual monomers and achieved 98.0-99.9% removal efficiency before releasing its exhaust to the air. Dow Reichhold on-site releases increased 17% in 2005, but are still at 27% of 1998 levels. Although overall facility production remained steady in 2005, increases in releases of 1,3-butadiene and styrene contributed to most of the increase in on-site releases. These increases were primarily because of a production increase in the part of the facility that processes 1,3-butadiene and an accidental release, both involving 1,3-butadiene. The recent reductions in 2003-2005 compared to 1998-2002 are partially the result of declining production, but also the result of implementing of a more rigorous Leak Detection and Repair (LDAR) program that exceeds current regulations. Some of the reduction is also attributable to improvements in the conversion of monomer in the production recipes.

In 2006, a railcar containing styrene on the facility site spontaneously polymerized, releasing styrene to the air and land. There were no fires or explosions at the facility, and no serious injuries occurred at the facility or in the nearby community. Release and transfer amounts associated with the incident will be reported in the 2006 TRI report.



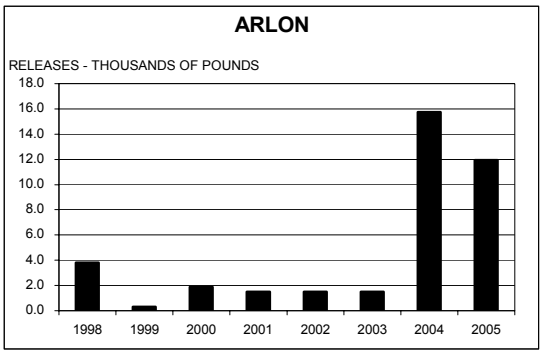

**Rank #18 – Hirsh Industries –** Hirsh Industries produces a line of consumer durables. These products include file cabinets, shelving units, and lateral filing systems. These items are used in home and office applications. Hirsh Industries is located north of Dover.

Hirsh reported one TRI chemical in 2005, certain glycol ethers. It is used as a paint solvent in their process. Although on-site releases decreased 1% 2005, production activities involving certain glycol

ethers increased 10%, and total on-site release is now at 46% of the 1998 amount. This trend is partially the result of declining production during 1999-2003 (production increased 32% for 2003-2005), but also the result of a more effective painting process, improved paint products from their vendors formulated to meet new hazardous air pollutant (HAP) regulations, and utilizing more accurate methods to estimate the amounts of releases. One of the chemicals last reported in 2000 is used in small amounts and no longer meets the reporting threshold. The on-site release amount also varies year-to-year because of production levels and the amount of paint used in the process.

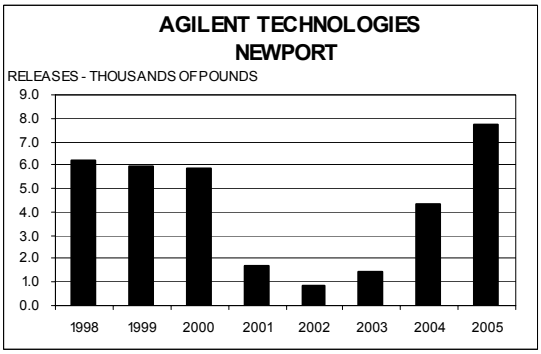
**Rank #19 – Arlon –** Arlon specializes in ceramic-filled fluoropolymers (i.e., PTFE) and other laminates that are used in frequency-dependent circuit applications such as base stations and antennas for wireless telecommunications. Arlon also produces precision calendared silicone rubber coated fabric sheets and specialty extruded silicone rubber tapes.

Arlon reported two TRI chemicals, xylene and copper, in 2005. Arlon uses xylene as a chemical processing aid in the coating of fiberglass with the silicone rubber dispersion. A large portion of xylene released by the process is sent to the on-site thermal oxidizer system. Copper is used in the antenna assemblies and all copper waste was recycled.




On-site release amounts increased significantly in 2004 because of a failure in the heat exchanger in the thermal oxidizers that destroy xylene releases from the coating process. The heat exchanger was repaired in September 2005, and the xylene release amount should return to historical levels in 2006.

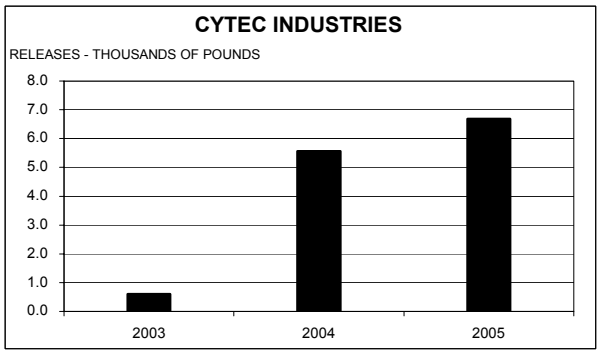
**Rank #20 – Agilent Technologies Newport** – Agilent is a global company that manufactures test and measurement equipment, life science and chemical analysis solutions, and automated test equipment. The Agilent Technologies facility, located in Newport, manufactures columns for use with liquid gas chromatographs, and cleans and coats glass for use in making instruments at other Agilent facilities.




Agilent Technologies reported on-site releases of methanol, toluene, and acetonitrile in 2005. All of the releases were to air. The largest reported release was for methanol. Larger amounts of the three chemicals were also sent off site and burned in an energy recovery unit.

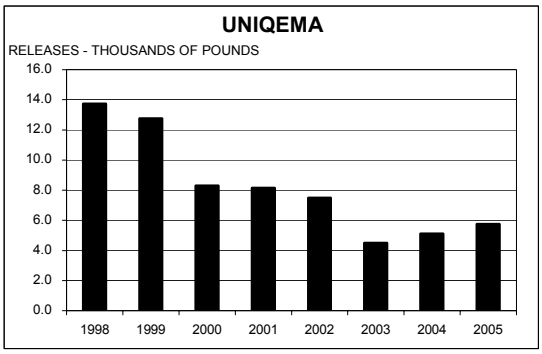
The 79% increase in on-site release amounts in 2005 was due to the continuing consolidation of some manufacturing operations from another Agilent facility to the Newport facility in 2004, initiating the reporting of acetonitrile and increasing the release of methanol.

**Rank #21 - Cytec Industries –** Cytec Industries is manufacturer of polymers used in commercial and military aerospace polymer composites. This facility is located in New Castle. No Cytec reports were filed in 2001 and 2002 as the facility was part of an adjacent facility, Avecia, and became a separate facility in August 2003. The current facility began reporting as a separate facility in August 2003, and the facility filed a partial year report for that year. The 2004 year is the first full year report for this facility, and a trend for this facility is just starting to become established.




Cytec reported on two TRI chemicals, methanol and ethylene glycol, for 2005. All releases were to air. The largest on-site release was from methanol, and it made up over 99% of the total on-site release. Methanol is produced on-site and used as a processing aid. Larger amounts of methanol were also sent off site for treatment and energy recovery. Although Cytec reported a 70% production increase in 2005 related to the process involving methanol, on-site releases increased only 20% because most of the releases were better managed in 2005, and were not directly related to production volume.

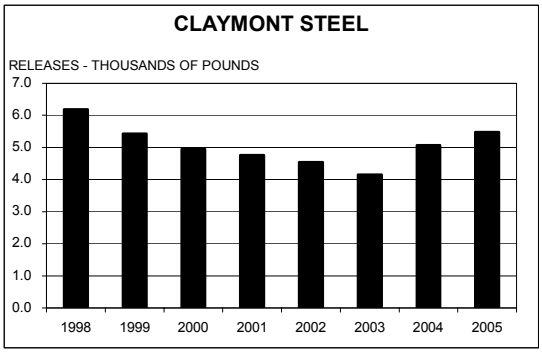
**Rank #22 - Uniqema -** Formerly ICI Atlas Point; these two companies have occupied the site located in New Castle near the Delaware Memorial Bridge since 1971.




This facility manufactures products that promote the mixing of oil and water-based ingredients in many consumer products, such as baby shampoo, shaving cream, mouthwash, pharmaceuticals, and many other personal care and industrial products.

Uniqema reported on eleven chemicals for 2005. The majority of the on-site chemical releases were from 4,4-isopropylidenediphenol, ethylene oxide, and propylene oxide. All on-site releases were to air. Uniqema TRI releases increased 13% in 2005 and 14% in 2004 following a 40% decrease in 2003, but have decreased 58% since 1998. The increases in 2004 and 2005 were the result of changes in production levels related to the specific chemicals, and a modification to the product portfolio in response to market conditions. Additionally, in 2005 Uniqema brought on-line the first phase of a 20-million lb/year expansion to manufacture amine-based chemicals. Overall production during 2003-2005 increased by 9%.

**Rank # 23 – Claymont Steel / Citisteel**- Located on a 425-acre site in Claymont, Claymont Steel, formerly known as CitiSteel, manufactures carbon steel plate for heavy industrial applications. The facility purchases and recycles more than 300,000 tons of scrap steel annually, and melts it in an electric arc furnace. The melted steel is cast into large slabs which are rolled into plates of thicknesses from 1/4" to 5-1/2". The plates are sold throughout the entire United States. Claymont Steel reported on-site releases of seven TRI chemicals, all metallic compounds, in 2005. Most of the releases, 86%, were to air. Zinc compounds were the largest on-site release, at 51% of the total.

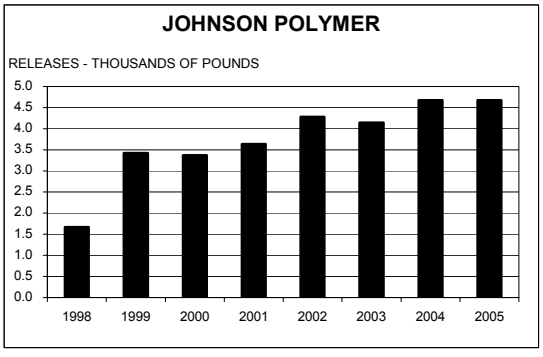



The increase in the 2004 on-site amount total was due to a 22 percent increase in production over 2003. For 2005, on-site releases increased 24%, although production decreased 13%. In early 2006, in an effort to more accurately measure emissions and releases of toxic chemicals, Claymont Steel conducted "stack tests" on exhaust air leaving their furnace dust collector. This data provides a more accurate report of emissions than the existing emission factor method (see page 3). Because the results of these tests were known prior to the reporting date for 2005, they are included in the 2005 TRI reports.

The results of these tests showed that the release amounts for most chemicals reported by Claymont Steel were higher than previously reported, although one test was lower. Mercury compounds in particular, was significantly higher than expected, increasing to 361 pounds, up from 36 pounds reported in 2004. Claymont Steel conducted a second test of these metallic compounds in January 2007 to verify the accuracy of the initial test, pursuant to a November 2006 DNREC Secretary's order requiring quarterly stack testing and substantial reductions in mercury emissions. The two tests were done by different independent laboratories. The test results are not available at press time and will be reported at a later date and in the 2006 TRI Detail Report. Also included in the order are requirements to reduce mercury emissions by not accepting any municipal scrap steel that may contain mercury, by continuing to participate in the above Mercury Switch Recovery Program, and by developing a mercury reduction plan that includes selecting and implementing by the end of 2008 one or more of several options to reduce remaining on-site mercury emissions.

In August 2006, Delaware joined with other stakeholders including Claymont Steel and the EPA, in announcing the National Vehicle Mercury Switch Recovery Program. This program is designed to recover mercury switches used in lighting and braking systems in 2002 and older vehicles as they are being prepared for recycling. Some of the mercury in the switches can be released to air during the steel-melting process. Although Claymont Steel does not prepare vehicles for recycling, the company has committed to purchasing shredded automobile scrap steel from suppliers that are participating in the switch recovery program.

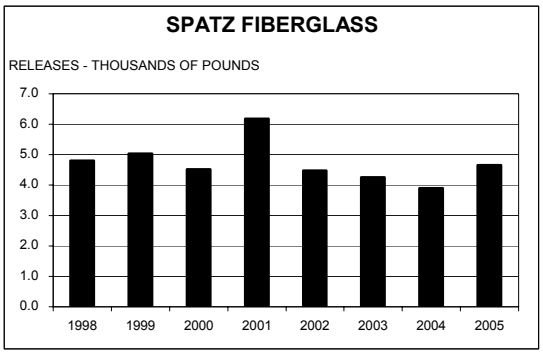
**Rank #24 – Johnson Polymer** – Johnson Polymer manufactures emulsion polymers, sometimes referred to as latex, primarily for the printing and packaging industries, but also used as additives for paints and coatings. Typical customers include ink and coating manufacturers.




Johnson Polymer reported six TRI chemicals in 2005. The total amount of individual releases reported in 2005 was unchanged from 2004. Ammonia was the largest on-site release. It is used to adjust the pH of their process. On-site releases of all chemicals have increased by 181% since 1998, primarily due to changes in methods used to more accurately estimate release amounts. Although small increases in some chemicals occurred because of scheduled tank

cleanings, these were offset by decreases in other chemical releases because of product consolidation and production efficiency increases.

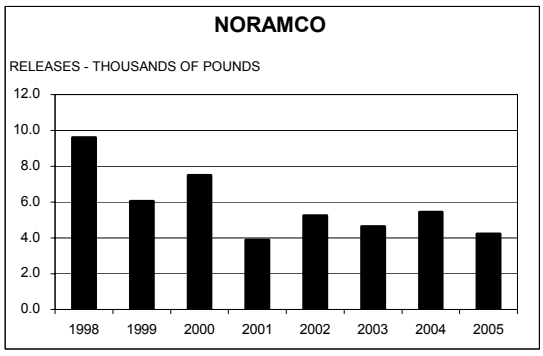
**Rank #25 – Spatz Fiberglass –** Spatz Fiberglass Products Inc. is a custom manufacturer of fiberglass reinforced products for the corrosion resistant and molded products industries.




Spatz manufactures three types of products: Industrial fiberglass components, commercial gel-coated products, and architectural products. Industrial components include duct systems, pressure pipe, stacks, scrubbers, tanks, and fume hoods. Commercial products include seats and tables for fast food restaurants and fish hatchery tanks. Architectural products consist primarily of cornices, columns, and landscaping products.

Spatz reports on one TRI chemical, styrene. It is used as a solvent in their adhesives used to manufacture the fiberglass components. The trend of on-site release in recent years has been slightly down, primarily the result of lower production volumes. However, in 2005, production increased and the amount of on-site styrene release increased by a corresponding amount.

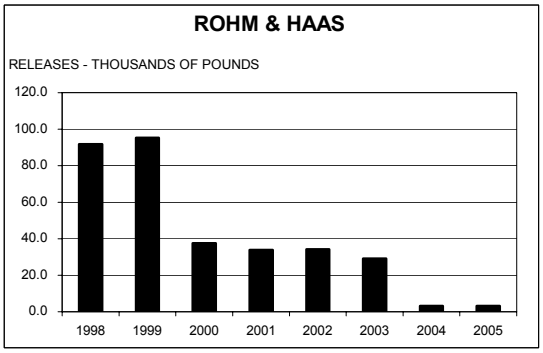
**Rank #26 – Noramco -** Located in Wilmington, Noramco was formed in 1979. Noramco products include bulk active pharmaceutical ingredients and medical devices. The pharmaceutical products are primarily sold to Johnson & Johnson pharmaceutical sector finishing facilities in the United States, Argentina, Belgium, Brazil, Ireland, and Mexico. The medical devices are incorporated in medical products used by other Johnson & Johnson companies.




Noramco reported on-site releases of six TRI chemicals in 2005. The largest on-site chemical release was dichloromethane, followed by methanol and toluene. All on-site releases were to air. Noramco on-site releases have decreased by 44% since 1998, with year-to-year variations reflecting the overall level of production, amounts of specific products produced, and efforts to reduce releases. For 2005, with production up about 6%, the combination of an 8% decrease in dichloromethane and a 19% increase in methanol resulted in a 3% increase in total on-site releases, not including an accidental release of toluene in 2004. When the 2004 accidental toluene release is included, reported on-site releases are down 22% in 2005.

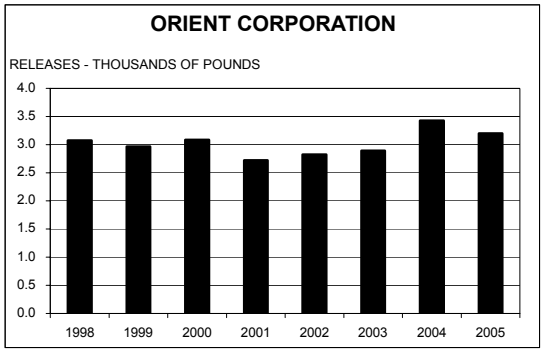
**Rank #27 – Rohm & Haas / Rodel** – Rohm & Haas, formerly known as Rodel, changed ownership in 2003. This facility manufactures polishing pads and slurries for the semiconductor, electronics, and glass industries. The facility is located south of Newark in the Diamond State Industrial Park. Rohm & Haas reported on three TRI chemicals for 2005.

N,N-Dimethylformamide (DMF), used as a solvent carrier in the polishing pad manufacturing process, accounted for 100% of their on-site releases. Releases of DMF from the Rohm & Haas facility mostly occur through evaporation from the poromerics coating and washing process. The majority of the DMF used is recycled in their distillation equipment for reuse in the process. The 2005 DMF release was 4% of the 1998 level, the result of installing improved recovery equipment in 2000 and increasing fume collection as well as distillation column efficiency in 2004. Also in 2004, methyl ethyl ketone (MEK) was delisted from TRI reporting. In 2003, MEK contributed 10,158 pounds to the total on-site release for that year. All on-site releases of DMF were to air, and were primarily stack emissions from the oxidizer used to control process emissions.




**Rank #28 – Orient -** Orient Corporation of America was established in Port Newark, NJ in 1979. Its parent company, Orient Chemical Industries, Ltd., is located in Osaka, Japan and was established in 1917. Orient distributes various dyes, pigment dispersions and charge control agents.

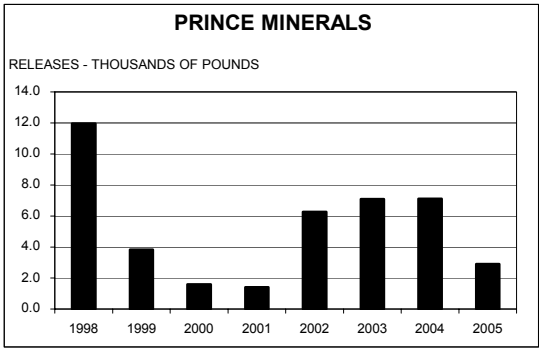
In order to meet the increasing demand for its products, Orient Corporation of America moved its manufacturing operations to Seaford, Delaware in 1991 where it constructed a new manufacturing facility for the production of Nigrosine Dye, a product used in phenolic and polyamide resins and special paints. Orient supplies a large share of domestic demand for this type of dye.




Orient reported on three TRI chemicals for 2005. All on-site releases were to air. Aniline was the predominant on-site release and accounted for 92% of the total. Chromium compounds and nitrobenzene were the other reported TRI chemicals, with nitrobenzene reported as the remaining 8% on-site release. Aniline and nitrobenzene are used in the production of dyes. Chromium compounds are purchased and sold as is, with no releases. Small amounts of aniline and nitrobenzene were also sent off-site for treatment, and additional aniline waste was also treated on-site. Although production levels have increased 11% since 1998, on-site releases have increased only 4%, the result of higher efficiency due to lengthening of the production cycle and a corresponding reduction of startup/shutdown times.

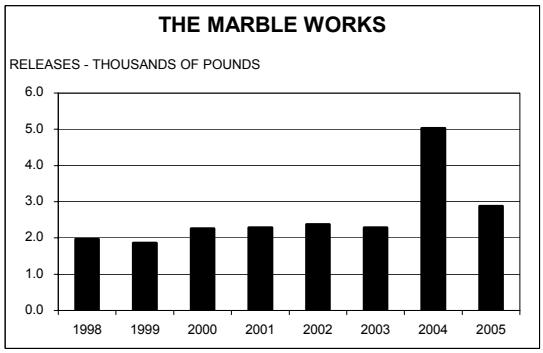
**Rank #29 – Prince Minerals / American Minerals** - Prince Minerals Inc. is a custom processor of natural occurring ores and minerals. These minerals include manganese, olivine (magnesium iron silicate), iron chromite, and magnesite. Prince Minerals, formerly known as American Minerals, is located in New Castle. In March 2005, Prince Minerals acquired American Minerals. Prince Minerals is a specialty minerals processor with processing and warehousing facilities across North America. The New Castle facility converts ore materials into products which are utilized by industry and the public on a daily basis such as bricks, steel, and fertilizer. Prince Minerals grinds, crushes, screens, and blends these materials into

products tailored to the specific needs of their industrial, agricultural, and environmental remediation customers.



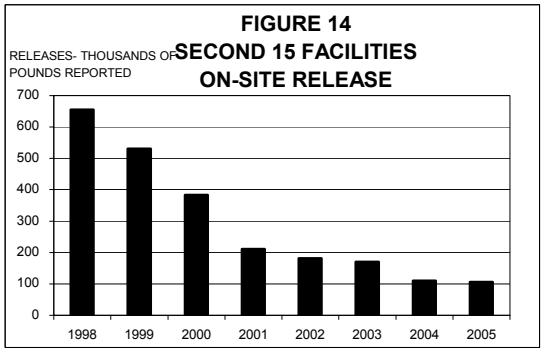

Prince Minerals reported on four TRI chemicals for 2005. These were all metals or metal compounds. Over 60% of the on-site release amount was manganese compounds released to air. The facility has reduced its on-site releases by 76% since 1998. In 2002, an increase in manganese emissions was reported because manganese inventory was increased and a more accurate emission factor was used to estimate the manganese releases. From 2002-2004, increases in on-site releases were production-related. In 2005, the reported manganese emissions decreased, as reporting was based on a more detailed and accurate calculation of emissions based on actual production rates and material inventory volume. Overall production has increased 28% at this facility since 2001.

**Rank # 30 – The Marble Works** – Established in 1983 near Greenwood, The Marble Works manufactures cultured marble products for home and commercial bath and kitchen applications. Typical customers include builders who incorporate these products into their finished buildings.




The Marble Works reported one TRI chemical, styrene, in 2005. Styrene is used as a solvent in their process. On-site releases of TRI chemicals at The Marble Works have increased by 46% since 1998, mainly through production increases. In 2004, methyl methacrylate was included in TRI reporting as it exceeded the TRI reporting threshold only for that year. For 2005, methyl methacrylate did not exceed the reporting threshold, and the on-site release amount reported for styrene increased about 30% compared to 2003 reported amounts, in line with the 2004-2005 production increases.

**Combined Second 15 Facilities Trend -** Figure 14 shows the totals for the facilities ranked #16-30 for reported on-site releases. The trend is down by 84% since 1998. This trend shows a greater percent decrease than the top 15 group, which had a 14% decrease since 1998.




Because of the greater decrease in amounts of the Second 15 group, its contribution to the State total decreased from 3% in 1998 to 1% in 2005. Facilities in the Second 15 group tend to be more closely spaced in their rankings with regard to pounds released on-site. This adds to the variability in rankings from year-to-year as individual facility releases vary in their normal course of operations.

# Persistent Bioaccumulative Toxic (PBT) Chemicals, 2000-2005

For reporting year 2000 and beyond, EPA established substantially lower reporting thresholds for 15 chemicals and 2 chemical categories that are highly persistent and bioaccumulative in the environment (PBTs). Six chemicals and one new category were also added to the PBT list in 2000. The new thresholds apply regardless of whether the PBT chemical is manufactured, processed, or otherwise used. Table 7 provides a list of these PBT chemicals and their thresholds.

Persistent Bioaccumulative Toxics (PBTs) are receiving increased scrutiny as we learn more about them, and reporting PBTs is also being emphasized to an increasing degree. These chemicals are of particular concern because they are not only toxic, but also because they remain in the environment for long periods of time, are not readily destroyed, and accumulate in body tissues. Beginning with reporting year 2001 and beyond, lead and lead compounds also have a reduced threshold of 100 pounds, down from the previous 25,000 pounds for manufactured and processed and 10,000 pounds otherwise used thresholds, except lead contained in stainless steel, brass, or bronze alloys.

**TABLE 7**
**PBT CHEMICALS AND REPORTING THRESHOLDS**
**(pounds/year)**

| Chemical or Chemical Category | Threshold (Pounds) | 2005 Reports |
|---|---|---|
| Aldrin | 100 | 0 |
| Benzo[g,h,I]perylene | 10 | 10 |
| Chlorodane | 10 | 0 |
| Dioxin and dioxin-like compounds category | 0.1 grams | 6 |
| Heptachlor | 10 | 0 |
| Hexachlorobenzene | 10 | 1 |
| Isodrin | 10 | 0 |
| Lead * | 100 | 4 |
| Lead and lead compounds * | 100 | 14 |
| Mercury | 10 | 2 |
| Mercury compounds | 10 | 7 |
| Methoxychlor | 100 | 0 |
| Octachlorostyrene | 10 | 1 |
| Pendimethalin | 100 | 0 |
| Pentachlorobenzene | 10 | 2 |
| Polychlorinated biphenyls (PCB's) | 10 | 1 |
| Polycyclic aromatic compounds category | 100 | 13 |
| Tetrabromobisphenol A | 100 | 0 |
| Toxaphene | 10 | 0 |
| Trifluralin | 100 | 0 |

* Lower Threshold For 2001 Reports

Therefore, not all of the PBT chemicals released in prior years were reportable, even though it is likely these chemicals were released at, or near, the current reported rate if the facility had no significant change in its operation. For example, 21 facilities reported lead or lead compounds in 2002 and 2001 and 19 in 2003 compared to 7 in 2000. All of these facilities were in operation prior to 2001. Dover Air Force Base (DAFB) Small Arms Range was the top reporter for on-site lead release in 2001 but did not report any lead release for 2002-2005. Although at least two Executive Orders, 12856 and 13148, encourage Federal facilities to set leadership examples in reporting information to the public regarding toxic and hazardous chemicals, the DAFB claims that the Small Arms Range, on the grounds of the base, is a separate facility and is exempt since it has less than 10 full-time employees. Although DAFB did report a small amount of one fuel-based chemical in 2005, it used a TRI-allowable exemption to exclude other non-PBT TRI chemicals on the base that might otherwise be reportable.

Additional release information on all PBTs reported to the Delaware TRI program can be found starting on the next page.

Table 8 shows the results of PBT reporting for 2003-2005 compared to total 2005 TRI data. PBT on-site releases for 2005 comprise about 0.4% of the total TRI on-site releases. Total reported PBT wastes increased by 1.25 million pounds (28%) in 2005, largely because of increased off-site recycle, but PBT on-site releases were higher by only 1%. All reports are made on Form R, as Form A may not be used to report PBTs.

Table 9 below shows the amounts of each PBT chemical reported as released by the TRI reporting facilities in 2005. Lead compounds made up 87% of the total on-site PBT releases and over 93% of the transfers off-site, largely to recycle from Johnson Controls. Almost the entire large amount of mercury transferred off-site was from the closure of the Occidental Chemical chlor-alkali facility.

## TABLE 8
## 2005 TRI PBT DATA SUMMARY
**(IN POUNDS)**

| | All Data 2005 | PBTs only 2005 | PBTs only 2004 | PBTs only 2003 |
|---|---|---|---|---|
| No. of facilities | 72 | 28 | 26 | 28 |
| No. of Form A's | 53 | NA | NA | NA |
| No. of Form R's | 293 | 61 | 60 | 62 |
| No. of PBT Chemicals | 103 | 11 | 11 | 11 |
| On-site Releases | | | | |
| Air | 6,472,074 | 4,095 | 3,797 | 5,230 |
| Water | 1,211,798 | 1,857 | 1,002 | 311 |
| Land | 752,894 | 26,559 | 27,356 | 21,826 |
| Total On-Site | 8,436,766 | 32,510 | 32,154 | 27,367 |
| Off-site Transfers | | | | |
| POTWs | 1,514,246 | 11 | 186 | 2,013 |
| Recycle | 11,259,408 | 5,488,166 | 4,293,112 | 4,575,042 |
| Energy Recovery | 2,709,850 | 1 | 0 | 0 |
| Treatment | 199,493 | 12 | 0 | 0 |
| Disposal | 4,400,539 | 80,633 | 66,217 | 70,592 |
| Total Transfers | 20,083,537 | 5,568,822 | 4,359,516 | 4,647,648 |
| On-site Waste Mgmt. | | | | |
| Recycle | 10,079,028 | 50,619 | 10,603 | 7,185 |
| Energy Recovery | 19,786,104 | 0 | 0 | 0 |
| Treatment | 38,176,991 | 749 | 766 | 710 |
| Total on-site Mgmt. | 68,042,123 | 51,368 | 11,369 | 7,895 |
| Total Waste | 96,562,426 | 5,652,701 | 4,403,039 | 4,682,910 |

## TABLE 9
## 2005 PBT RELEASE SUMMARY
(REPORTED AMOUNTS IN POUNDS)

| 2005 PBT CHEMICAL | FORM R REPORTS | ON-SITE RELEASES TOTAL AIR | TOTAL WATER | TOTAL LAND | ON-SITE TOTAL | TRANSFERS OFF-SITE | ON-SITE WASTE MGMT. |
|---|---|---|---|---|---|---|---|
| BENZO (G,H,I)PERYLENE | 10 | 57.49 | 4.20 | 0.00 | 61.69 | 0.10 | 411.00 |
| DIOXIN AND DIOXIN-LIKE COMPOUNDS | 6 | 0.01 | 0.00 | 0.00 | 0.01 | 39.27 | 0.00 |
| HEXACHLOROBENZENE | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 886.10 | 0.00 |
| LEAD | 4 | 5.00 | 5.00 | 0.00 | 10.00 | 61.00 | 46,616.00 |
| LEAD COMPOUNDS | 14 | 2,608.96 | 1,826.56 | 26,500.00 | 30,935.52 | 5,173,914.70 | 0.00 |
| MERCURY | 2 | 261.09 | 17.26 | 0.00 | 278.35 | 393,561.23 | 4,000.00 |
| MERCURY COMPOUNDS | 7 | 734.60 | 0.01 | 59.00 | 793.61 | 91.54 | 0.00 |
| OCTACHLOROSTYRENE | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 143.30 | 0.00 |
| PENTACHLOROBENZENE | 2 | 14.30 | 0.00 | 0.00 | 14.30 | 12.80 | 0.00 |
| POLYCHLORINATED BIPHENYLS (PCBs) | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 15.20 | 0.00 |
| POLYCYCLIC AROMATIC COMPOUNDS | 13 | 413.44 | 3.50 | 0.00 | 416.94 | 96.83 | 341.36 |
| **TOTALS** | **61** | **4,094.89** | **1,856.53** | **26,559.00** | **32,510.42** | **5,568,822.07** | **51,368.36** |

(1) Dioxins are reportable in grams and have been converted to pounds.

The Indian River Power plant reported a 2,179-pound decrease in the on-site release of lead compounds, primarily the result of coal analysis data. Halko again reported the top amount of on-site PBT chemical waste management with 46,616 pounds of lead being recycled on-site. Appendix I shows the PBT data detail, listing each facility reporting on each PBT chemical. Also see additional facility information in the Top 15/Second 15 sections regarding reasons for changes in reports from other PBT-reporting facilities.

## Mercury and Mercury Compounds

Mercury (elemental mercury) and mercury compounds are an important part of the PBT category, and this section discusses some of the data in these reports. Reported elemental mercury on-site release amounts were unchanged as Occidental Chemical transitions through its chlor-alkali plant shutdown. Occidental Chemical sent about 383,000 pounds of mercury off-site for recycling as part of this shutdown activity. Occidental contributed virtually all the 278 pounds of elemental mercury released on-site, but this amount will substantially decrease as the facility completes its shutdown. DNREC has requested verification of Occidental mercury release amounts, as we suspect that the reported amounts are not as accurate as available technology can provide. Results of this verification will be reported on in the 2006 TRI report.

Reported on-site releases of mercury compounds in Delaware increased 231 pounds (41%) due to an increase in the report from the Claymont Steel facility. Despite this increase in reported mercury release from Claymont steel, overall total mercury releases in Delaware decreased by 29% in 2005 compared to the 2003 reported amount of 1,512 pounds and decreased 38% since the peak of 1,738 pounds in 2002. Figure 15 shows the combined trend for mercury and mercury compounds. See the Claymont Steel profile on pages 28-29 for additional information on this increase.

Figure 16 shows the percentage each of the facilities that reported a mercury or mercury compound release contributed in 2005. Two facilities, Dentsply Caulk Lakeview and Intervet, were required to report because of other mercury activity, but did not have any mercury on-site releases to report in 2005. On-site release amounts for mercury can be found on page F-10 in Appendix F.

**FIGURE 15**
**DELAWARE MERCURY TRENDS**
**ON-SITE RELEASE, ALL FACILITIES**

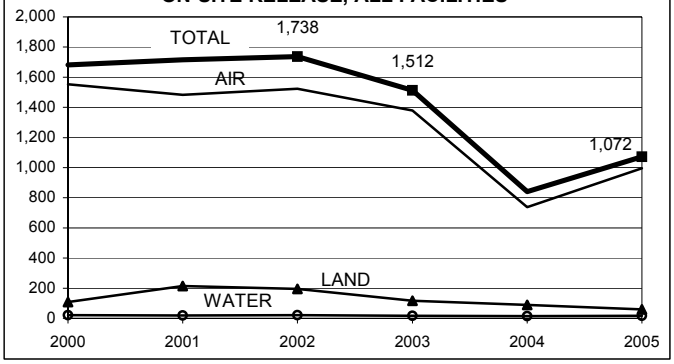
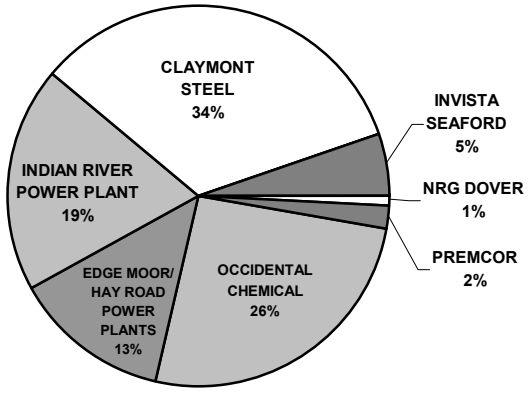



**FIGURE 16**
**DEIAWARE FACILITIES**
**2005 ON-SITE MERCURY RELEASES**




**1,072 TOTAL POUNDS REPORTED**

# Carcinogenic TRI Chemicals

## TABLE 10

### CARCINOGENS REPORTED BY DELAWARE FACILITIES FOR 2005

| CHEMICAL NAME | IARC | 2005 REPORTS |
|---|---|---|
| ACROLONITRILE | 2B | 1 |
| ARSENIC | 1 | 1 |
| ARSENIC COMPOUNDS | 1 | 2 |
| BENZENE | 1 | 6 |
| 1,3-BUTADIENE | 2A | 2 |
| BUTYL ACRYLATE | 2B | 2 |
| CHROMIUM COMPOUNDS | 1 | 10 |
| COBALT COMPOUNDS | 2B | 3 |
| DICHLOROMETHANE | 2B | 1 |
| 1,3-DICHLOROPROPYLENE | 2B | 1 |
| DIETHYL SULFATE | 2A | 1 |
| ETHYL ACRYLATE | 2B | 2 |
| ETHYLBENZENE | 2B | 4 |
| ETHYLENE OXIDE | 1 | 1 |
| FORMALDEHYDE | 2A | 1 |
| HEXACHLOROBENZENE | 2B | 1 |
| LEAD | 2B | 4 |
| LEAD COMPOUNDS | 2B | 14 |
| 4,4'-METHYLENEBIS(2-CHLOROANILINE) | 2A | 1 |
| NAPHTHALENE | 2B | 6 |
| NICKEL | 2B | 3 |
| NICKEL COMPOUNDS | 1 | 6 |
| NITROBENZENE | 2B | 1 |
| P-CHLOROANILINE | 2B | 1 |
| POLYCHLORINATED BIPHENYLS | 2A | 1 |
| POLYCYCLIC AROMATIC COMPOUNDS | 2A,B | 13 |
| PROPYLENE OXIDE | 2B | 1 |
| STYRENE | 2B | 6 |
| TETRACHLOROETHYLENE | 2B | 1 |
| TOLUENE DIISOCYANATE (MIXED ISOMERS) | 2B | 2 |
| TRICHLOROETHYLENE | 2A | 1 |
| VINYL ACETATE | 2B | 2 |
| VINYL CHLORIDE | 1 | 1 |
| | TOTAL = | 103 |

Source: 2005 DNREC Database, December 1, 2006

Some chemicals are reportable under TRI because they are either known or suspected human carcinogens. Known human carcinogens are those that have been shown to cause cancer in humans. Suspected carcinogens are those that have been shown to cause cancer in animals. Table 10 contains those known and suspected carcinogens that were reported by Delaware facilities for 2005. Next to each chemical is its International Agency for Research on Cancer (IARC) rating as a: Known (1), Probable (2A), or Possible (2B) carcinogen. Polycyclic aromatic compounds is a class of chemicals with chemicals in both 2A and 2B IARC classifications. Of the 8.4 million pounds of TRI chemicals reported by facilities as released on-site to the environment in 2005, 4.9% (411,000 pounds) were known or suspected carcinogens. Releases on-site of all carcinogens decreased 10% (45,000 pounds) compared to 2004 data and decreased 52% (446,000 pounds) since the peak in 1998. For additional information on cancer rates and causes, please go to the Public Health cancer web site listed in the "For Further Information" section on page 55.

## Carcinogens Trend, 1995-2005

The number of carcinogen reports increased by 3 to 103 in 2005, and the total number of carcinogen chemicals increased by three to 33 following a large increase in the number of lead and lead compounds reporting facilities in 2001 (because of the reduced reporting threshold). Additional information of lead and lead compounds is on pages 33-35.

Table 11 contains amounts unadjusted for changes in reporting requirements. In order to put the trend in uniform perspective, adjustments must be made for changes in reporting requirements during this period. The downward trends of both unadjusted and adjusted values are shown in Figure 17 on the next page. Chemical reports required during a portion of the time period because of changes in reporting requirements have been excluded for the entire period in the "Adjusted" trend.

# TABLE 11

## 1995-2005 CARCINOGENS

### REPORTED ON-SITE RELEASES IN POUNDS, NOT ADJUSTED

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **KNOWN** | | | | | | | | | | | |
| AIR | 253,818 | 225,184 | 192,099 | 209,094 | 219,970 | 209,828 | 209,295 | 177,473 | 123,191 | 96,562 | 98,107 |
| WATER | 596 | 201 | 6,917 | 10,246 | 3,048 | 4,395 | 9,114 | 9,682 | 9,339 | 9,817 | 4,643 |
| LAND | 1,791 | 331 | 286,041 | 363,793 | 306,630 | 258,008 | 169,197 | 170,074 | 312,576 | 173,414 | 134,194 |
| **KNOWN TOTAL** | 256,205 | 225,716 | 485,057 | 583,133 | 529,648 | 472,231 | 387,606 | 357,229 | 445,106 | 279,793 | 236,944 |
| **PROBABLE** | | | | | | | | | | | |
| AIR | 113,482 | 78,491 | 55,274 | 53,558 | 139,293 | 55,418 | 44,326 | 35,581 | 24,216 | 27,417 | 23,600 |
| WATER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 4 |
| LAND | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **PROBABLE TOTAL** | 113,482 | 78,491 | 55,274 | 53,558 | 139,293 | 55,418 | 44,326 | 35,581 | 24,220 | 27,421 | 23,604 |
| **POSSIBLE** | | | | | | | | | | | |
| AIR | 331,904 | 344,888 | 223,518 | 167,420 | 186,506 | 135,946 | 91,851 | 189,296 | 98,269 | 97,283 | 102,427 |
| WATER | 359 | 351 | 196 | 1,175 | 290 | 271 | 4,873 | 2,109 | 1,431 | 2,308 | 3,416 |
| LAND | 0 | 5 | 2,550 | 51,625 | 142 | 40 | 21,607 | 17,475 | 21,714 | 49,266 | 44,500 |
| **POSSIBLE TOTAL** | 332,263 | 345,244 | 226,264 | 220,220 | 186,938 | 136,257 | 118,331 | 208,880 | 121,414 | 148,856 | 150,343 |
| TOTAL AIR | 699,204 | 648,563 | 470,891 | 430,072 | 545,769 | 401,192 | 345,472 | 402,350 | 245,676 | 221,262 | 224,135 |
| TOAL WATER | 955 | 552 | 7,113 | 11,421 | 3,338 | 4,666 | 13,987 | 11,791 | 10,773 | 12,129 | 8,062 |
| TOTAL LAND | 1,791 | 336 | 288,591 | 415,418 | 306,772 | 258,048 | 190,804 | 187,549 | 334,290 | 222,680 | 178,694 |
| **GRAND TOTAL** | 701,950 | 649,451 | 766,595 | 856,911 | 855,879 | 663,906 | 550,263 | 601,690 | 590,739 | 456,071 | 410,890 |

Source: DNREC TRI 2005 Database, December 1, 2006

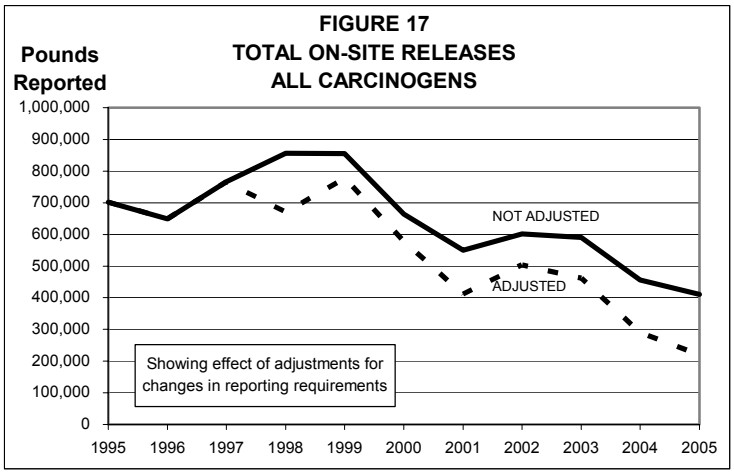
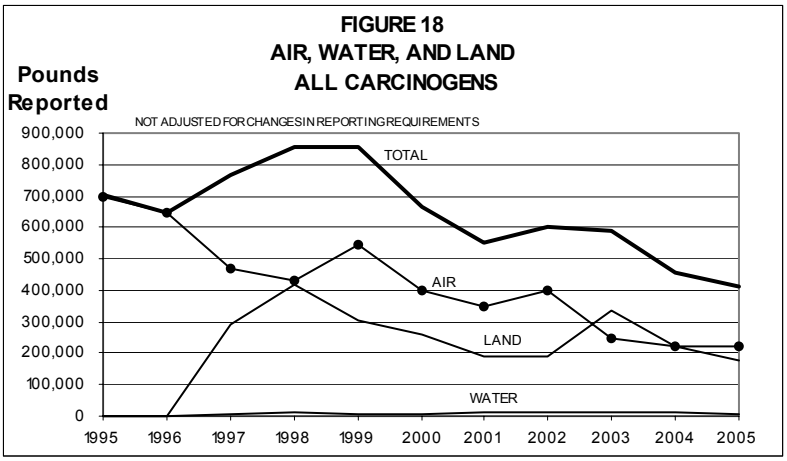



**FIGURE 17**
**TOTAL ON-SITE RELEASES**
**ALL CARCINOGENS**

These adjustments generally exclude the power-generating and ore-processing industries, and involve metallic compounds produced from impurities in the fuel and raw materials used by these facilities. These facilities were required to start reporting in 1998. Adjustments occurring in this period affected the air, water, and land release amounts. For example, new reports for lead and lead compounds at their lower thresholds starting in 2001 accounted for 30,300 pounds of exclusions in 2005. Lead and lead compounds reports under the higher thresholds were not excluded if the facility was already reporting them in 2000 or before. In either the adjusted or unadjusted trend, the strong downward trend continued in 2005. Additional carcinogen detail is reported in Appendix J.



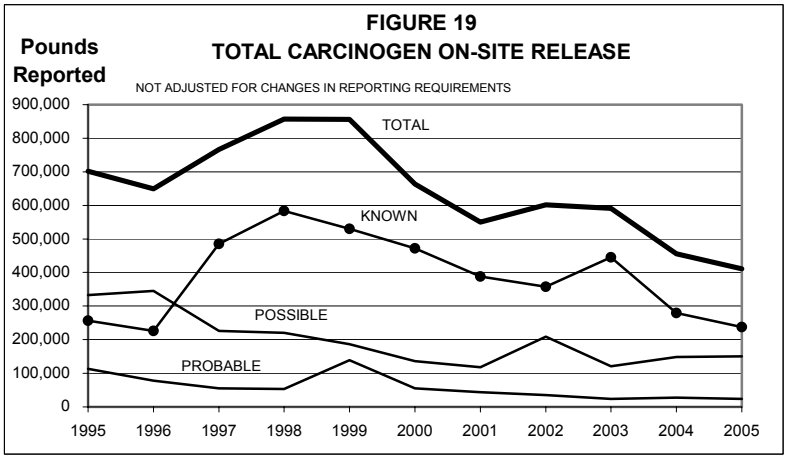




Figure 18 shows the effects of each of the media category releases on the total reported carcinogen release trend. Air and land releases equally influence the total, while water releases play a minor part.

**Known Carcinogens**

Figure 19 shows the trend of each of the three carcinogen groups and their effect on the total on-site release. Reported releases to land of all known carcinogen compounds were 75% of on-site land releases for carcinogens in all categories (known, probable, and possible). Chromium compounds, 95% released to land and also a product of fuel combustion, are the highest land release at 60,200 pounds, with the Indian River Power Plant and INVISTA contributing over 99% of these land releases. Nickel compounds, 81% released to land, are second highest of the three land releases in the known carcinogen category. The Indian River Power Plant reported almost all of the nickel compound releases to land for 2005. From 1997-2000, the land release reports of nickel compounds, a product of fuel combustion at Valero, greatly influenced the values for known carcinogens. Their 1997 value was 283,000 pounds. Now, the ash and chemicals in it are transferred out-of-state for waste management. Arsenic compounds, the remaining known carcinogen released to land, was released by the Indian River Power Plant in the form of ash. Arsenic compounds accounted for 16% of the total known carcinogen land release.

Reported air releases of known carcinogens increased by 1.6% in 2005 but have generally been declining and are now at 39% of the peak in 1995. Vinyl chloride contributed 73% of the known carcinogen category air releases in 2005. Vinyl chloride constitutes 32% of all carcinogen air releases and 17% of carcinogen total on-site releases for air, water, and land in 2005. Vinyl chloride, with a total release of 71,600 pounds and only reported by Formosa Plastics, is highest in total releases in the known carcinogen category. Kaneka reported vinyl chloride up until 2003, but Kaneka is now closed. Benzene releases to air, all from Valero and Sunoco, have declined from 58,000 pounds in 1995 (from Valero and the now closed Metachem facility) to 8,000 pounds in 2005. Benzene made up 8.1% of the known carcinogen air releases.

Water releases on-site of known carcinogens are 2.0% of the known carcinogen total. Nickel compounds contributed 68% of the known carcinogen release to water, with chromium compounds and benzene contributing 19% and 13%, respectively.

**Probable Carcinogens**

All seven probable category carcinogens except four pounds to water, were reported released to on-site air during this period. The largest air release contributors were trichloroethylene, reported by Camdel Metals, and 1,3,-butadiene, reported by Dow Reichhold. They combined for 90% of the probable carcinogen releases. The trend for trichloroethylene release has declined 48%, down from 29,332 pounds in 1995 to 15,333 pounds in 2005. The trend for 1,3,-butadiene, reported by Valero and Dow Reichhold, is up 1,650 pounds (40%) in 2005, and is now at 5,789 pounds and only 8% of the 72,439 pounds reported in 1995. Both facilities reported increases in 2005. The probable carcinogen air release high in 1999 (139,923 pounds) was due to an 83,000-pound reported release of formaldehyde from Valero. The probable carcinogen total for 2005 is down 3,820 pounds (14%) and is now at 23,600 pounds, 21% of the 1995 amount and 17% of the 1999 amount.

**Possible Carcinogens**

There are 19 chemicals in this category for 2005. About two-thirds of the total amount is reported released to air, one-third to land, and about 2% to water. The top release in this category is vinyl acetate, 98% (46,400 pounds) of which is released by Formosa Plastics. The Formosa report accounts for 30% of the total category release to all media and 44% of the category release to air. This release was estimated using a higher basis starting in 2002. Although the Formosa reported amount (45,397 pounds for 2005) is much higher than the 2,000 pounds reported for 2001, the actual amount may not be much different from prior years because of the change in basis in 2002. Styrene, 75% of which is released by Justin Tanks, is the second highest on-site release for this class, and increased 9,200 pounds in 2005. Most of this increase, 8,886 pounds, was reported by Justin Tanks. Styrene accounts for 27% of the total release for this category. The Justin Tanks' styrene trend has increased 21% since 1995, but total styrene releases have decreased by 3% over the same period.

As before, in ***Limitations of TRI Data*** on Page 3, we urge caution when using this data, as THIS DATA DOES NOT INDICATE AMOUNT OF HUMAN EXPOSURE.

Discussion about specific facilities and their releases can be found on pages 15-32 in the Top 15 and Second 15 Facilities Sections.

# Trend Analysis

TRI data is available back to 1987. Changes in the reporting requirements over time have caused an increase both in the number of chemicals and in the number industries subject to reporting. As explained on page 4, two of the most significant changes to TRI reporting occurred in 1995 and 1998, when large increases in chemicals (1995) and industries subject to reporting (1998) occurred. The next section shows the results of the 1998 addition. Later sections show data on a constant reporting basis with adjustment made for the new data.

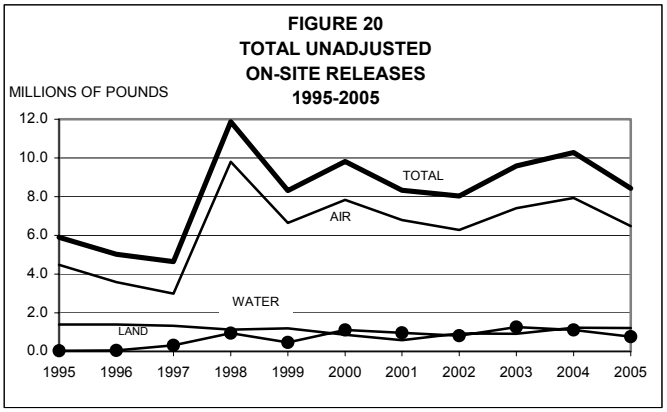
## Unadjusted Trends, 1995-2005

The analysis presented in this section uses 1995 as a base year for presenting trends for all reportable chemicals and facilities and is **not adjusted** for changes in reporting requirements. Figure 20 on this page and Table 12 on the next page show the results of reporting during the entire 1995-2005 period. For comparison, please read the explanation for **adjusted trends** on page 42 and look at the corresponding adjusted amounts in Table 13 on page 43.

### On-Site Releases, Unadjusted, 1995-2005

On-site releases include emissions to the air, discharges to bodies of water, and releases at the facility to land including placement in on-site landfills. Figure 20 shows the trend of on-site releases without adjustments. The increase in 1998 was due to the change in reporting requirements when a large number of new facilities started to report, as explained above and also on page 4. Unadjusted on-site release amounts decreased 18% (1,842,000 pounds) since 2004, and have decreased 29% since the peak in 1998. Significant changes reported in 2005 include the facilities and chemicals shown in the table below.

**FIGURE 20**
**TOTAL UNADJUSTED ON-SITE RELEASES 1995-2005**




| FACILITY | CHEMICAL | MEDIA | AMOUNT (pounds) |
|---|---|---|---|
| Formosa Plastics | Ammonia | Air | +46,000 |
| DuPont Edge Moor | Manganese Compounds | Water | +40,000 |
| General Motors | Xylene (Mixed Isomers) | Air | +37,000 |
| Indian River Power Plant | Hydrogen fluoride | Air | +30,000 |
| Valero | Vanadium compounds | Land | -149,000 |
| Indian River Power Plant | Barium compounds | Land | -187,000 |
| Valero | Ammonia | Air | -198,000 |
| Indian River Power Plant | Hydrochloric acid | Air | -800,000 |

Some of these changes have been caused by improvements in the way facilities estimate amounts, and many of these changes were discussed in the Top 15 or Second 15 facility profiles on pages 15-32. In addition, you may contact the facility for a more in-depth discussion of the reasons for specific changes.

# TABLE 12
# 1995-2005 TRI DATA SUMMARY
## (IN POUNDS)
### NOT ADJUSTED FOR CHANGES IN REPORTING REQUIREMENTS

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of facilities | 75 | 77 | 74 | 80 | 76 | 80 | 82 | 83 | 84 | 73 | 72 |
| No. of Form A's | 33 | 40 | 34 | 75 | 72 | 61 | 57 | 55 | 55 | 52 | 53 |
| No. of Form R's | 228 | 220 | 242 | 277 | 254 | 310 | 316 | 317 | 325 | 307 | 293 |
| No. of Chemicals | 90 | 98 | 100 | 106 | 101 | 109 | 104 | 106 | 103 | 102 | 103 |
| On-site Releases | | | | | | | | | | | |
| Air | 4,483,402 | 3,586,182 | 2,995,461 | 9,796,431 | 6,651,166 | 7,841,017 | 6,796,684 | 6,281,850 | 7,408,938 | 7,935,898 | 6,472,074 |
| Water | 1,394,739 | 1,395,328 | 1,328,937 | 1,126,527 | 1,197,861 | 866,312 | 573,937 | 928,813 | 916,287 | 1,231,061 | 1,211,798 |
| Land | 28,678 | 42,409 | 317,243 | 937,708 | 462,579 | 1,103,632 | 965,666 | 814,385 | 1,263,668 | 1,111,392 | 752,894 |
| Unadjusted On-Site Release | 5,906,819 | 5,023,919 | 4,641,641 | 11,860,666 | 8,311,606 | 9,810,961 | 8,336,287 | 8,025,048 | 9,588,893 | 10,278,351 | 8,436,766 |
| Off-site Transfers | | | | | | | | | | | |
| POTW's | 3,214,800 | 4,522,131 | 4,301,095 | 3,286,302 | 2,996,401 | 2,199,807 | 1,575,732 | 1,201,161 | 1,452,241 | 1,466,465 | 1,514,246 |
| Recycle | 17,127,835 | 10,054,483 | 10,612,518 | 12,002,926 | 9,295,315 | 8,649,678 | 8,845,326 | 9,248,730 | 8,366,885 | 9,841,412 | 11,259,408 |
| Energy Recovery | 2,427,102 | 1,173,331 | 1,663,440 | 1,491,543 | 1,389,936 | 2,543,840 | 2,642,626 | 2,538,090 | 2,834,075 | 2,755,903 | 2,709,850 |
| Treatment | 910,090 | 1,297,004 | 688,661 | 630,761 | 894,822 | 901,604 | 183,567 | 398,572 | 370,126 | 179,969 | 199,493 |
| Disposal | 2,767,339 | 2,905,928 | 4,010,594 | 3,983,506 | 3,056,466 | 3,816,862 | 3,878,689 | 4,196,691 | 4,084,899 | 3,919,599 | 4,400,539 |
| Total Transfers | 26,447,166 | 19,952,877 | 21,276,308 | 21,395,038 | 17,632,940 | 18,111,791 | 17,125,940 | 17,583,245 | 17,108,225 | 18,163,347 | 20,083,537 |
| On-site Waste Mgmt. | | | | | | | | | | | |
| Recycle | 29,100,208 | 29,882,121 | 32,996,062 | 34,549,050 | 32,671,856 | 31,188,694 | 24,133,885 | 25,033,817 | 22,404,667 | 8,772,135 | 10,079,028 |
| Energy Recovery | 332,834 | 219,184 | 19,255,280 | 16,155,665 | 22,981,591 | 29,095,221 | 25,863,740 | 15,740,469 | 16,455,440 | 23,595,635 | 19,786,104 |
| Treatment | 55,990,904 | 51,590,060 | 69,425,233 | 68,475,327 | 69,501,151 | 64,404,879 | 40,734,134 | 33,392,650 | 30,305,786 | 31,654,455 | 38,176,991 |
| Total On-Site Waste Mgmt. | 85,423,946 | 81,691,365 | 121,676,575 | 119,180,042 | 125,154,598 | 124,688,794 | 90,731,759 | 74,166,935 | 69,165,893 | 64,022,225 | 68,042,123 |
| Total Waste | 117,777,931 | 106,668,161 | 147,594,524 | 152,435,746 | 151,099,144 | 152,611,546 | 116,193,986 | 99,775,229 | 95,863,010 | 92,463,923 | 96,562,426 |

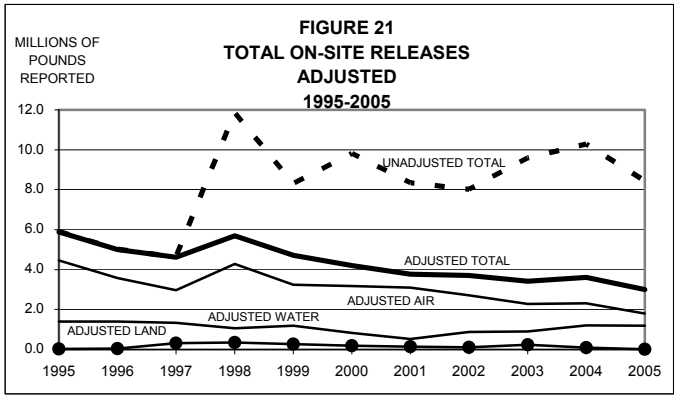
NOT ADJUSTED FOR CHANGES IN REPORTING REQUIREMENTS EXCEPT PBTs AS NOTED

SOURCE: DNREC 2005 DATABASE, DECEMBER 1, 2006

## Adjusted Trends, 1995-2005

When the new facilities that were added in 1998 are removed from the trends, the adjusted result is shown in Table 13 on the facing page and Figure 21 below. Table 13 shows the adjusted amounts of TRI chemicals in all categories that were reported in 1995-2005. This table is adjusted to show only those facilities and chemicals that were reporting in 1995 and earlier. Facilities and chemicals added after 1995 are not included. For comparison, please look at the corresponding unadjusted values in Table 12 on page 41.

## On-Site Adjusted Releases, 1995-2005




Overall, reported **adjusted** on-site releases decreased 17% (606,000 pounds) in 2005 following a 7% increase in 2004. Since 1995, adjusted on-site releases have decreased 49% (2.9 million pounds). Figure 21 shows this trend. Data on this page and in Table 13 can be compared to pages 40-41 to see the effects of the adjustments, and the top two lines in Figure 21 show the effect of the new facilities when they are removed from the unadjusted totals. Figure 20 on page 40 shows the effect of the new facility additions in 1998. Significant changes for 2005 for reports not mentioned in the unadjusted trend include:

| FACILITY | CHEMICAL | MEDIA | AMOUNT (pounds) |
|---|---|---|---|
| Valero | Carbonyl Sulfide | Air | +23,000 |
| DuPont Edge Moor | Carbonyl Sulfide | Air | +15,000 |
| Perdue Georgetown | Nitrate Compounds | Water | +15,000 |
| Valero | Nickel Compounds | Air/Water | -53,000 |
| Honeywell | n-Hexane | Air | -95,000 |
| Valero | Hydrochloric Acid | Air | -104,000 |

Some of these changes have been caused by improvements in the way facilities estimate amounts, and many of these changes were discussed in the Top 15 or Second 15 facility profiles on pages 15-32. In addition, the facility may contacted for a more in-depth discussion of the reasons for specific changes.

# TABLE 13
## 1995-2005 TRI DATA SUMMARY
### (IN POUNDS)

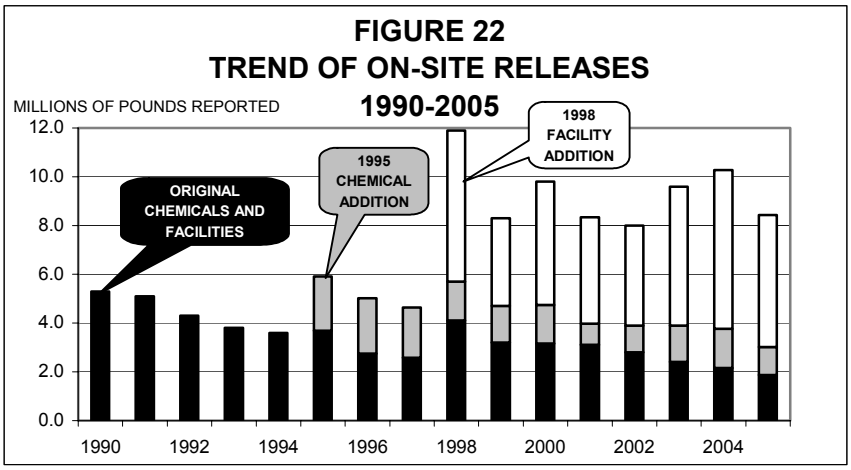
ADJUSTED FOR CHANGES IN REPORTING REQUIREMENTS AFTER 1995

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of facilities | 73 | 75 | 73 | 69 | 66 | 67 | 68 | 69 | 69 | 59 | 59 |
| No. of Form A's | 28 | 34 | 29 | 30 | 32 | 31 | 31 | 34 | 35 | 30 | 35 |
| No. of Form R's | 221 | 212 | 237 | 240 | 231 | 241 | 235 | 230 | 241 | 220 | 211 |
| No. of Chemicals | 87 | 94 | 98 | 103 | 98 | 101 | 95 | 97 | 94 | 92 | 93 |
| On-site Releases | | | | | | | | | | | |
| Air | 4,466,247 | 3,569,898 | 2,973,704 | 4,286,680 | 3,246,228 | 3,179,809 | 3,095,921 | 2,709,026 | 2,276,521 | 2,303,755 | 1,797,066 |
| Water | 1,394,739 | 1,395,328 | 1,328,937 | 1,066,787 | 1,186,041 | 826,660 | 524,281 | 884,057 | 904,351 | 1,207,521 | 1,193,242 |
| Land | 28,678 | 42,409 | 317,243 | 347,129 | 278,319 | 194,448 | 144,956 | 117,249 | 243,873 | 93,534 | 8,373 |
| Adjusted On-Site Releases | 5,889,664 | 5,007,635 | 4,619,884 | 5,700,596 | 4,710,588 | 4,200,917 | 3,765,159 | 3,710,331 | 3,424,745 | 3,604,811 | 2,998,681 |
| Off-site Transfers | | | | | | | | | | | |
| POTW's | 3,214,795 | 4,511,126 | 4,301,090 | 3,286,189 | 2,996,375 | 2,199,732 | 1,575,639 | 1,200,858 | 1,451,686 | 1,460,708 | 1,504,209 |
| Recycle | 17,127,835 | 10,054,483 | 10,544,518 | 11,963,716 | 9,295,315 | 8,613,087 | 8,833,437 | 9,217,843 | 8,351,340 | 9,061,209 | 10,222,101 |
| Energy Recovery | 2,427,102 | 1,173,331 | 1,663,440 | 1,491,543 | 1,389,936 | 2,543,840 | 2,642,626 | 2,538,090 | 2,834,075 | 2,755,903 | 2,709,850 |
| Treatment | 897,090 | 1,277,004 | 675,561 | 611,696 | 894,822 | 899,534 | 172,939 | 398,571 | 370,126 | 179,718 | 199,481 |
| Disposal | 2,767,339 | 2,905,928 | 4,010,594 | 3,719,902 | 2,985,340 | 3,472,927 | 3,572,487 | 3,825,837 | 3,678,483 | 3,545,566 | 4,031,903 |
| Total Transfers | 26,434,161 | 19,921,872 | 21,195,203 | 21,073,046 | 17,561,788 | 17,729,120 | 16,797,128 | 17,181,199 | 16,685,709 | 17,003,103 | 18,667,544 |
| On-site Waste Mgmt. | | | | | | | | | | | |
| Recycle | 29,100,208 | 29,882,121 | 32,996,062 | 34,549,050 | 32,671,856 | 31,188,654 | 24,133,520 | 25,033,532 | 22,404,664 | 8,772,132 | 10,079,025 |
| Energy Recovery | 332,834 | 219,184 | 19,255,280 | 16,155,665 | 22,981,591 | 29,095,220 | 25,863,740 | 15,740,469 | 16,455,440 | 23,595,635 | 19,786,104 |
| Treatment | 55,811,179 | 51,424,487 | 68,575,887 | 67,199,660 | 69,149,944 | 63,832,520 | 40,120,809 | 32,420,206 | 29,106,061 | 29,514,410 | 36,803,615 |
| Total On-Site Waste Mgmt. | 85,244,221 | 81,525,792 | 120,827,229 | 117,904,375 | 124,803,391 | 124,116,394 | 90,118,069 | 73,194,206 | 67,966,165 | 61,882,177 | 66,668,744 |
| Total Waste | 117,568,046 | 106,455,299 | 146,642,316 | 144,678,017 | 147,075,767 | 146,046,431 | 110,680,356 | 94,085,737 | 88,076,619 | 82,490,091 | 88,334,969 |

ADJUSTED FOR CHANGES IN REPORTING REQUIREMENTS

SOURCE: DNREC 2005 DATABASE, DECEMBER 1, 2006

## Effect of Chemical and Facility Group Additions, 1990-2005




As mentioned above, significant groups of chemicals and facilities were added to the TRI program at two times over the years. Other smaller groups, or even individual chemicals, were also added or deleted over this time. Analysis later in this section will start with the first addition in 1995 and remove the major group of facilities that were added in 1998 to show the trend of constantly reportable groups of facilities and chemicals over time. Figure 22 shows the effect starting in 1990 and follows the trend of each group since it was added to the TRI program. Data from 1987-89 is excluded because reporting requirements changed significantly and a valid comparison of this data with later data is not feasible.

The trend of each group and the reports affecting the trends will be discussed in the following portions of this section. All groups show generally decreasing trends over time, but the group of facilities added in 1998 did report an increase over its initial amount in 2004. This group declined in 2005 and is now 780,000 pounds below its starting amount of 6.2 million pounds. The table below shows the amount reported in millions of pounds for each group at the time it was added, the 2005 reported amount, and the amount of change since the time it was added. The unadjusted increases in statewide total amounts reported in 1995 and 1998 are the result of the additions. If each group had remained constant at the time of its addition, amounts reported for 1998 and beyond would be 13.7 million pounds instead of the 8.4 million pounds actually reported in 2005. The reporting facilities have effected a reduction of 5.3 million pounds, or 39%, in their reported TRI chemical releases since 1990, or later if they were not reporting in 1990.

| GROUP | STARTING YEAR AMOUNT<br>Millions of Pounds | 2005 AMOUNT<br>Millions of Pounds | CHANGE<br>Millions of Pounds |
|---|---|---|---|
| Original Facilities and Chemicals | 5.30 | 1.87 | -3.43 |
| 1995 Chemical Addition | 2.23 | 1.15 | -1.08 |
| 1998 Facility Addition | 6.20 | 5.42 | -0.78 |
| TOTAL | 13.73 | 8.44 | -5.29 |

## Off-Site Transfers, Unadjusted, 1995-2005

An off-site transfer is a transfer of toxic chemical in wastes to another facility that is physically separate from the reporting facility and may even be out of state. Chemicals are reported as transferred to an off-site facility when they are transported away from the reporting facility for the purposes of treatment at a publicly owned treatment works (POTW), recycling, energy recovery, treatment, or disposal facility. Off-site transfers increased 11% in 2005, driven by recycling and disposal. Figures 23 and 24 show the trends in amounts of TRI chemicals in wastes transferred off-site for all facilities and chemicals reporting since 1995. To increase clarity, the lower portion of Figure 23 is expanded in Figure 24. The amount of recycle has been relatively steady from 1999-2003, but has increased in 2004 and 2005. The amounts sent to POTW and non-POTW treatment have been generally declining and the amounts sent off-site for energy recovery and disposal have been increasing. For comparison, please look at the corresponding adjusted values in Table 13 on page 43. Although the off-site transfers may be of less immediate local concern than on-site releases, the transfers to POTWs, treatment, and disposal still represent toxic chemicals in wastes that must be ultimately accounted for. As noted on page 9 and in Table 12 on page 41, the amounts reported here as transferred off-site are much greater than the amount of on-site releases. Significant changes reported for off-site transfer trends in 2005 are:

**FIGURE 23**
**OFF-SITE TRANSFERS, UNADJUSTED**
MILLIONS OF POUNDS REPORTED **1995-2005**

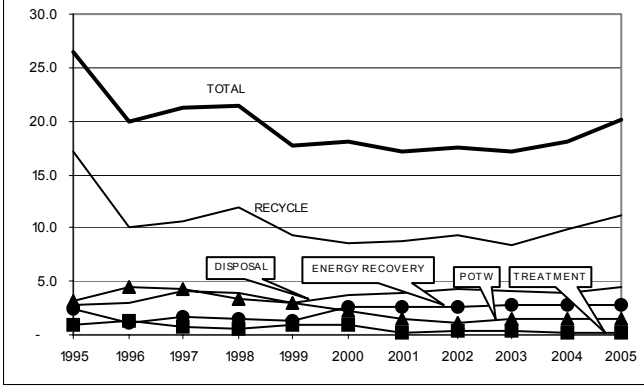
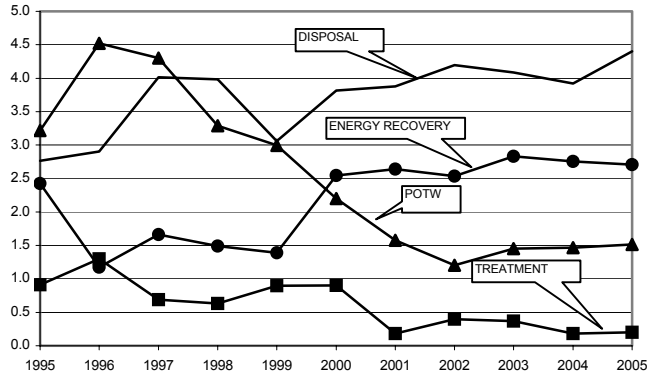
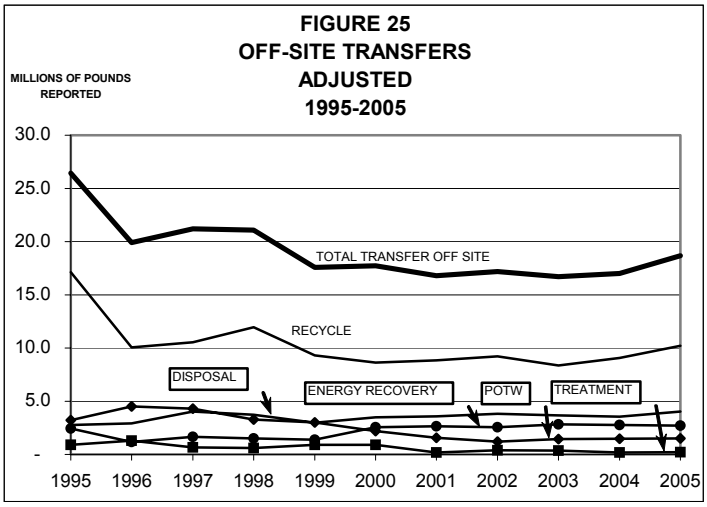


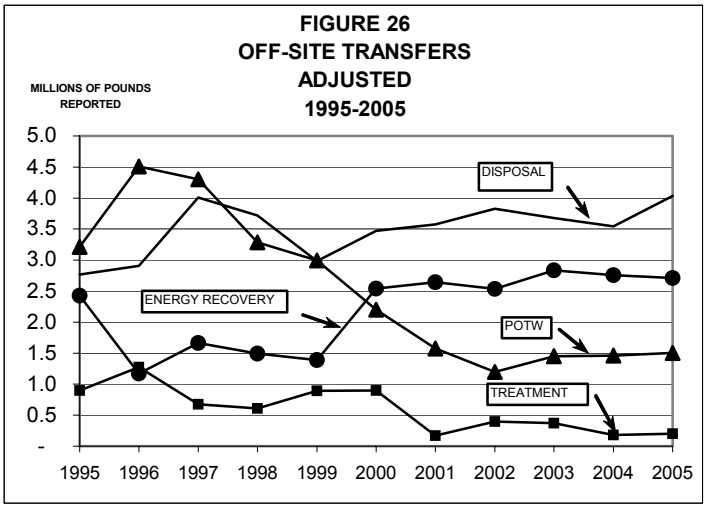

**FIGURE 24**
**OFF-SITE TRANSFERS, UNADJUSTED**
MILLIONS OF POUNDS REPORTED **1995-2005**




| FACILITY | CHEMICAL | OFF-SITE METHOD | AMOUNT (pounds) |
|---|---|---|---|
| Claymont Steel | Zinc Compounds | Recycle | -364,000 |
| SPI Polyols | Nickel Compounds | Recycle, Disposal | -226,000 |
| Ciba | Methanol | Recycle | -203,000 |
| Ciba | Biphenyl | Energy Recovery | -155,000 |
| Noramco | Methanol | Energy Recovery | +167,000 |
| Metal Masters | Nickel | Recycle | +168,000 |
| Occidental Chem. | Mercury | Recycle | +383,000 |
| DuPont Edge Moor | Manganese Cpds. | Disposal | +452,000 |
| Valero | Vanadium Cpds. | Recycle | +604,000 |
| Johnson Controls | Lead Compounds | Recycle | +865,000 |

## Off-Site Transfers, Adjusted, 1995-2005



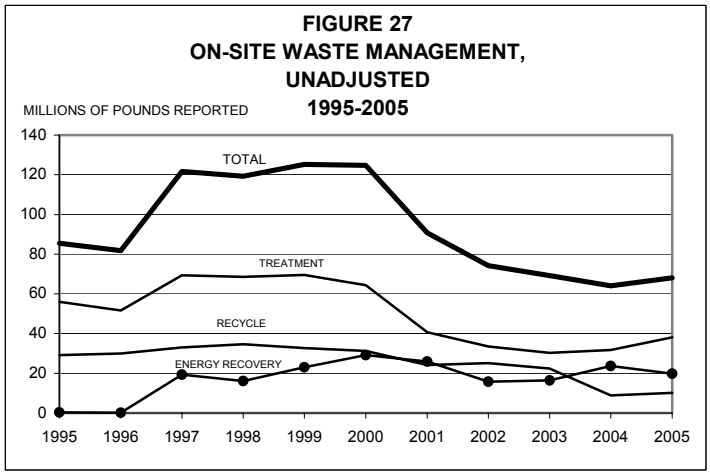

Figures 25 and 26 show the trends in amounts of TRI chemicals reported in wastes transferred off-site for facilities and chemicals reporting since 1995. The lower portion of Figure 25 (0.0 - 5.0 million pounds) is expanded in Figure 26. The amount of chemicals reported as transferred off-site since 1999 show a relatively flat trend through 2005, and the same general trend is noted for the adjusted amounts. For comparison, please look at the corresponding unadjusted trends on page 45 and the amounts in Tables 12-13. As shown in Table 13, over 50% of all off-site transfers are to recycling operations, so the total trend in Figure 25 is strongly influenced by the trend in amounts sent off-site for recycling.

The total adjusted net change in off-site transfers reported in 2005 was an increase of 10% (1.66 million pounds) since 2004, but the total adjusted trend is lower by 29% (-7.77 million pounds) since 1995. Amounts sent to off-site recycle increased by 12.8% (1,161,000 pounds) in 2005, disposal increased 13.7% (486,000 pounds), but this was partially balanced by a decrease of -1.7% (-46,000 pounds) in the amount sent off-site for energy recovery. Reported amounts sent off-site to POTWs and treatment showed smaller increases.

Unlike on-site releases where the amount of adjustment was 64% of the total because of the large reported releases to on-site air by the new facilities, off-site transfers are largely reported by original facilities, and the adjustment contributed by new facilities is only 7% of the total amount. Most of the adjusted amount, 1,019,000 pounds, was the reported off-site transfer for recycling of vanadium compounds in ash from the Valero refinery. Although Valero is not a new facility, vanadium compounds was newly listed in 2000, and Valero closed its on-site landfill and initiated off-site transfer of ash in 2005.

The total changes were balanced by other smaller increases and decreases from other reports at other facilities.

## On-Site Waste Management, Unadjusted, 1995-2005



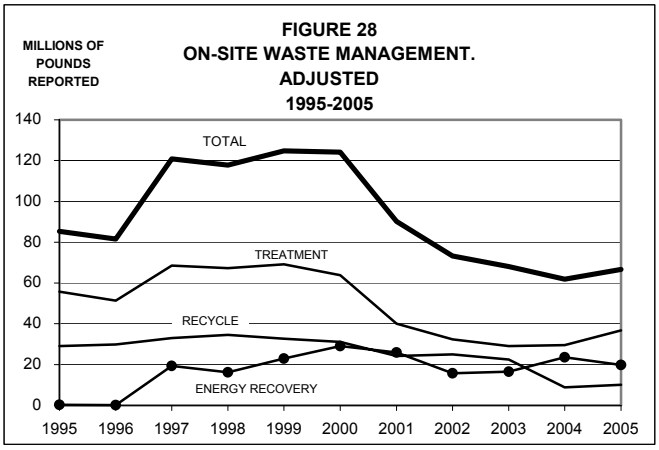

In some facilities, wastes were reported as managed on-site instead of being sent off-site for processing or disposal. On-site waste management is the processing of chemicals in wastes that do not leave the site of the reporting facility. When chemicals are recycled, recovered for energy, or treated at the facility, they are reported as managed on-site. Although these amounts represent a loss of finished product to the facility as waste, they are not as much of a threat to the environment as the other on-site categories since these amounts are managed and not disposed of, or released on-site. There is, of course, the risk that these chemicals may be released accidentally on-site to the environment during the waste management process. Figure 27 shows the trends for the on-site waste management activities since 1995. The increase in 1997 was due to two reports from Valero: The first was an increase of 16,000,000 pounds for on-site treatment of methanol, and the second was an increase of 17,000,000 pounds for on-site energy recovery of ammonia. The decrease in 2001 was due to a decrease of 7,500,000 pounds in formaldehyde energy recovery, a decrease of 2,100,000 pounds in methanol treatment, and a decrease of 8,000,000 pounds in MTBE treatment at Valero, and a decrease of 8,000,000 pounds in hydrochloric acid treatment at DuPont Edge Moor.

Significant changes reported for on-site waste management trends in 2005 are:

| FACILITY | CHEMICAL | ON-SITE WASTE MANAGEMENT METHOD | AMOUNT OF CHANGE (pounds) |
|---|---|---|---|
| Valero | Ammonia | Energy Recovery | -7,336,000 |
| Indian River Power Plant | Hydrochloric acid | Treatment | -1,087,000 |
| Valero | Hydrogen Cyanide | Treatment | -989,000 |
| Occidental Chemical | Chlorine | Treatment | -571,000 |
| Noramco | Toluene | Recycle | -349,000 |
| Medal | n-Hexane | Recycle | +399,000 |
| Indian River Power Plant | Ammonia | Treatment | +400,000 |
| Noramco | Methanol | Recycle | +430,000 |
| Medal | Methanol | Recycle | +462,000 |
| Valero | Carbon Disulfide | Treatment | +2,131,000 |
| DuPont Edge Moor | Hydrochloric Acid | Treatment | +2,168,000 |
| Valero | Carbonyl Sulfide | Energy Recovery, Treatment | +8,183,000 |

These changes were balanced by other smaller increases and decreases from other reports. Total unadjusted pounds for on-site waste management have increased by 6.3% since 2004, but decreased 20% since 1995. The on-site waste management amount totals are in Tables 12 and 13 and the corresponding adjusted values on page 48.

## On-Site Waste Management, Adjusted, 1995-2005

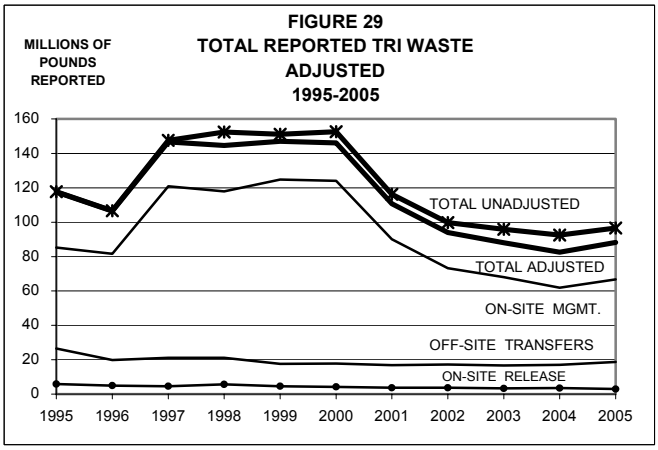



The reported trends for the three categories of on-site management and their total are shown in Figure 28 and the amounts in Table 13 on page 43. The total amount of waste managed on-site in 2005 was up 4.8 million pounds (7.7%) from 2004. Recycle amounts increased 15% (1,307,000 pounds), while energy recovery decreased 16% (3,810,000 pounds), and treatment increased 25% (7,289,000 pounds). Since 1995, on-site waste management amounts have decreased 22% (18.6 million pounds). Although energy recovery amounts increased by 19.5 million pounds since 1995, recycle amounts decreased by 19.0 million pounds and treatment also decreased by 19.0 million pounds.

As with off-site transfers, the adjustment for reporting requirements for on-site waste management activities is small, 1.4 million pounds out of the 68 million pounds reported, or about 2% of the total. Almost all of this adjustment is from the new electric generating facilities for on-site treatment of products of combustion or pollution control emissions. Because of this small adjustment, Figures 27 and 28 are almost identical. For comparison, please look at the corresponding unadjusted and adjusted values in Tables 12 and 13 on pages 41 and 43.

## Total Waste, Adjusted, 1995-2005

Figure 29 shows the adjusted totals and their grand total for the three waste categories taken from Figures 21, 25, and 28. This total reported waste amount is largely driven by on-site waste management, which makes up 69% of total TRI waste. Pounds for total reported TRI waste increased by 7.1% (5.8 million pounds) since 2004 but are down 25% (29.2 million pounds) since 1995.




Unadjusted individual amounts for 2005, not shown in Figure 29, are higher then the corresponding adjusted amounts, particularly for on-site air releases (+4.7 million pounds). The total adjusted TRI waste amount shown above is higher than the corresponding unadjusted amount by 8.2 million pounds. For comparison, look at the corresponding values in Tables 12 and 13, pages 41-43. Explanation for some of the changes in 1997 and 2001 are in the text at the top of page 47.

## Adjusted Trend, 1998-2005

The second set of trends is for the 1998-2005 period. The new industry segments added in 1998 that were excluded in the 1995-2005 trends are included here. What are excluded in these adjusted trends are the PBT reports and other chemicals that were added or had reporting thresholds reduced in 2000-2001. However, the amount of these adjustments is small, with adjustments in more than half of the excluded reports being zero and all but one adjustment less than 5%. Because the facilities added in 1998 are included here, the totals in Table 14 are higher than those in Table 13 on page 43. For comparison, look at the corresponding unadjusted values for on-site releases and waste management on pages 40-41.

**TABLE 14**

**1998-2005 TRI DATA SUMMARY**

**(IN POUNDS)**

**ADJUSTED FOR CHANGES IN REPORTING REQUIREMENTS AFTER 1998**

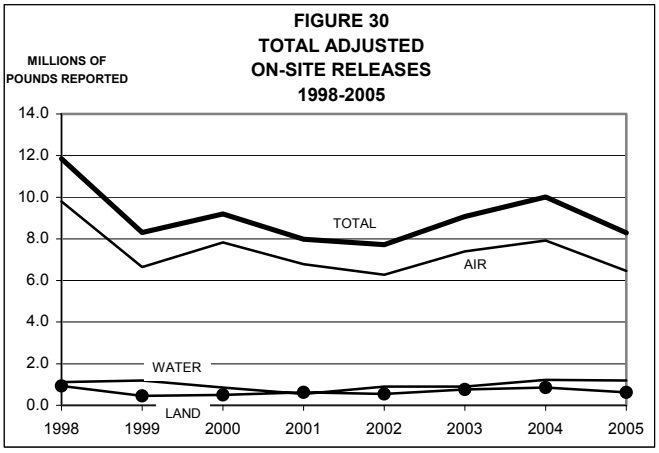
| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|---|---|
| No. of facilities | 79 | 76 | 80 | 80 | 76 | 77 | 68 | 66 |
| No. of Form A's | 70 | 72 | 61 | 57 | 55 | 55 | 52 | 53 |
| No. of Form R's | 271 | 254 | 278 | 283 | 257 | 267 | 252 | 238 |
| No. of Chemicals | 105 | 101 | 102 | 99 | 98 | 95 | 94 | 95 |
| On-site Releases | | | | | | | | |
| Air | 9,787,574 | 6,651,166 | 7,827,472 | 6,779,996 | 6,271,189 | 7,396,828 | 7,926,683 | 6,462,563 |
| Water | 1,126,527 | 1,197,861 | 864,760 | 558,611 | 900,317 | 912,493 | 1,223,242 | 1,202,793 |
| Land | 937,708 | 462,579 | 500,395 | 636,925 | 556,219 | 765,842 | 853,571 | 626,373 |
| Total On-Site Releases | 11,851,809 | 8,311,606 | 9,192,627 | 7,975,532 | 7,727,724 | 9,075,163 | 10,003,496 | 8,291,729 |
| Off-site Transfers | | | | | | | | |
| POTWs | 3,286,297 | 2,996,401 | 2,199,804 | 1,575,700 | 1,201,157 | 1,452,231 | 1,466,458 | 1,514,235 |
| Recycle | 11,963,926 | 9,295,315 | 8,649,611 | 8,578,821 | 8,964,241 | 8,111,171 | 9,415,300 | 10,229,084 |
| Energy Recovery | 1,491,543 | 1,389,936 | 2,543,840 | 2,642,626 | 2,538,090 | 2,834,075 | 2,755,903 | 2,709,850 |
| Treatment | 611,996 | 894,822 | 900,353 | 172,939 | 398,571 | 370,126 | 179,968 | 199,481 |
| Disposal | 3,983,506 | 3,056,466 | 3,712,460 | 3,775,364 | 4,070,123 | 3,955,520 | 3,815,383 | 4,259,498 |
| Total Off-site Transfers | 21,337,268 | 17,632,940 | 18,006,068 | 16,745,450 | 17,172,182 | 16,723,123 | 17,633,011 | 18,912,148 |
| On-site Waste Mgmt. | | | | | | | | |
| Recycle | 34,549,050 | 32,671,856 | 31,188,654 | 24,133,520 | 25,033,532 | 22,404,664 | 8,772,132 | 10,079,025 |
| Energy Recovery | 16,155,665 | 22,981,591 | 29,095,220 | 25,863,740 | 15,740,469 | 16,455,440 | 23,595,635 | 19,786,104 |
| Treatment | 68,126,327 | 69,501,151 | 64,403,879 | 40,733,844 | 33,392,400 | 30,305,396 | 31,654,035 | 38,176,580 |
| Total On-Site Waste Mgmt. | 118,831,042 | 125,154,598 | 124,687,753 | 90,731,104 | 74,166,400 | 69,165,500 | 64,021,802 | 68,041,709 |
| Total Waste | 152,020,119 | 151,099,144 | 151,886,448 | 115,452,086 | 99,066,307 | 94,963,786 | 91,658,310 | 95,245,586 |

ADJUSTED FOR CHANGES IN REPORTING REQUIREMENTS
SOURCE: DNREC 2005 DATABASE, DECEMBER 1, 2006

## On-Site Release, Adjusted, 1998-2005

Figure 30 shows the trend for reported on-site releases adjusted for new facilities and their chemicals added after 1998. The amount of adjustment is a relatively small, 145,000 pounds of land releases from newly listed vanadium and lead compounds at electric generating facilities. As in unadjusted trends, the total is almost totally influenced by the reported releases to air. Similar to the unadjusted on-site trend (Figure 19), the adjusted trend here for 1998-2005 is also down, primarily because of the changes reported on pages 40 and 42.

**FIGURE 30**
**TOTAL ADJUSTED ON-SITE RELEASES 1998-2005**

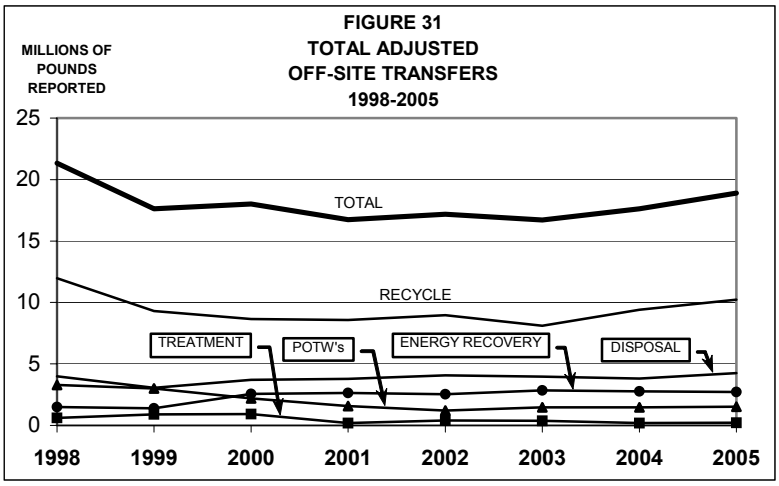


There was a decrease of 1,712,000 pounds (17%) in total reported on-site releases for this group in 2005, and there has been a net decrease of 3,560,000 pounds (30%) in reported on-site releases over the 1998-2005 time period. In addition to the notes in the facility profiles on pages 16-32 and the tables on pages 41 and 43 about how on-site waste releases have changed this year, reports of significant changes for facilities and/or chemicals added in 1998 and reporting in 2005 are:

| FACILITY | CHEMICAL | MEDIA | AMOUNT (POUNDS) |
|---|---|---|---|
| Indian River Power Plant | Arsenic Compounds | Land | +30,000 |
| Indian River Power Plant | Copper Compounds | Land | +19,000 |
| Indian River Power Plant | Vanadium Compounds | Land | +18,000 |
| Edgemoor/Hay Road Power Plants | Ammonia | Air | -23,000 |
| INVISTA Seaford | Hydrochloric Acid | Air | -40,000 |
| Edgemoor/Hay Road Power Plants | Hydrochloric Acid | Air | -127,000 |

Other facilities reported smaller amounts of increases and decreases to produce a net decrease of 1,712,000 pounds for 2005.

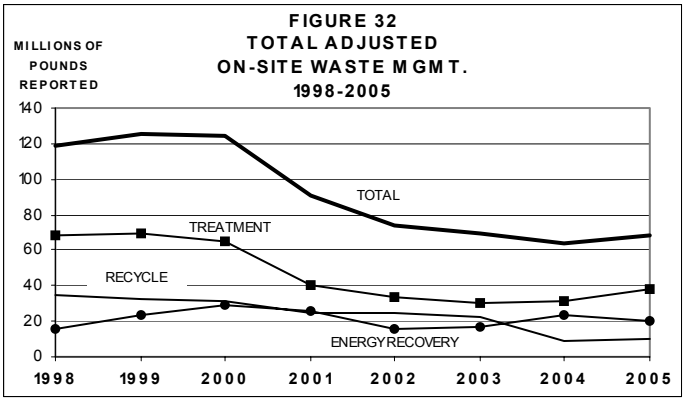
## Off-Site Transfers, Adjusted, 1998-2005




The adjusted off-site transfer total reported amount increased 7.3% (1.28 million pounds) in 2005. Table 14 and Figure 31 show the amounts transferred off-site, adjusted for the new reporting requirements starting in 1998. Off-site transfers also increased 5% in 2005 but have decreased 11% since 1998, again largely influenced by the amounts sent off-site for recycling. The increase in 2005 was primarily because of the increases in the amounts in the reports shown in the table at the bottom of page 45. There are no significant facility notes, in addition to the previous notes in the facility profiles or on pages 45-46 for off-site transfers, for this time period.

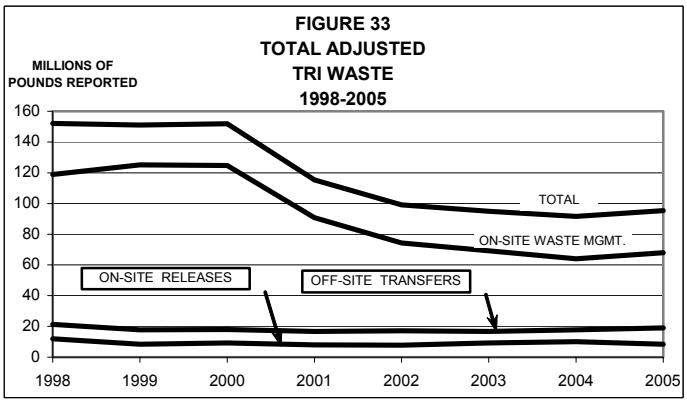
## On-Site Waste Management, Adjusted, 1998-2005

The trend of on-site management of TRI chemicals in waste shows a stabilizing trend in Figure 32, down 7.5% in 2004 and up 7.3% in 2005, virtually mirroring the unadjusted trend. Only 414 pounds were adjusted out for new chemicals added since 1998 in this trend. There are no significant notes for the new facilities added in 1998, in addition to the previous 1995-2005 facility notes for on-site waste management on pages 47-48.




## Total Reported TRI Waste, Adjusted, 1998-2005

Figure 33 shows the sum of reported On-site Releases, Off-Site Transfers, On-site Waste Management adjusted for reporting in 1998-2005, and their grand total. The 2004-2005 trend is up by 3.6 million pounds, having declined by 3.3 million pounds in 2004. The 1998-2005 trend is down by 57 million pounds (37%), largely influenced by the trend of On-Site Waste Management.




For comparison, please look at the corresponding values in Tables 12 and 14, pages 41 and 49. Explanations for some of the changes that happened in 2001 are in the text at the top of page 47.

TOXICS RELEASE INVENTORY

# Receiving TRI Chemicals in Wastes

When a facility transfers TRI chemical waste off-site, these wastes go to a receiving facility. Table 15 shows the total amounts of TRI chemicals reported as sent to Delaware facilities from other facilities, both in-state and out-of-state. Some of the receiving facilities in Delaware report to the TRI program as well, but many do not, based on the reporting requirements shown on pages 2 and 3. Only 1.5% of the TRI chemical wastes transferred to Delaware facilities are transferred to a TRI facility. DNREC does not receive reports from any out-of-state facilities that transfer wastes into Delaware. This data was obtained from the U.S. EPA.

## TABLE 15
## SUMMARY OF REPORTED TRANSFERS IN 2005
## TRI CHEMICALS TRANSFERRED TO DELAWARE FACILITIES
## FROM OTHER FACILITIES

**(IN POUNDS)**

| DELAWARE RECEIVING FACILITY | TOTAL TRANSFERS TO DELAWARE FROM DELAWARE FACILITIES | TOTAL TRANSFERS TO DELAWARE FROM OUT OF STATE FACILITIES | TOTAL TRANSFERS RECEIVED BY DELAWARE FACILITIES |
|---|---|---|---|
| ASHWORKS DELAWARE CONCRETE PUMP SALES | 0 | 421 | 421 |
| CANNON IRON & METAL, INC | 6,100 | 0 | 6,100 |
| **CLAYMONT STEEL *** | 0 | 22,174 | 22,174 |
| CLEAN EARTH OF NEW CASTLE | 0 | 11,906 | 11,906 |
| DELAWARE RECYCLABLE PRODUCTS | 29 | 0 | 29 |
| DELAWARE SOLID WASTE AUTHORITY CHERRY ISLAND | 8,761 | 0 | 8,761 |
| DELAWARE SOLID WASTE AUTHORITY GEORGETOWN | 0 | 0 | 0 |
| DELAWARE SOLID WASTE AUTHORITY SANDTOWN | 4,145 | 0 | 4,145 |
| DUPONT EXPERIMENTAL STATION | 0 | 287,915 | 287,915 |
| FIRST STATE RECYCLING | 0 | 350 | 350 |
| **HALKO MFG. CO. *** | 0 | 10,100 | 10,100 |
| INDUSTRIAL RESOURCE NETWORK, INC. | 1,005 | 1,200 | 2,205 |
| INTERNATIONAL PETROLEUM CORP. | 0 | 5,436 | 5,436 |
| KENT COUNTY WASTEWATER TREATMENT PLANT | 93,142 | 0 | 93,142 |
| KROEGERS SALVAGE | 0 | 1 | 1 |
| NEW CASTLE DEPT. OF PUBLIC WORKS | 63,042 | 0 | 63,042 |
| SEAFORD MUNICIPAL WASTEWATER TREATMENT PLANT | 1,571 | 0 | 1,571 |
| SOUTHERN METAL PROCESSING | 2,200 | 0 | 2,200 |
| TILCON DELAWARE INC. | 64 | 0 | 64 |
| **UNIQEMA INC. *** | 5,607 | 0 | 5,607 |
| US FILTER | 0 | 0 | 0 |
| VFL TECHNOLOGY CORPORATION | 395 | 44,759 | 45,154 |
| WILMINGTON WASTEWATER TREATMENT PLANT | 1,347,064 | 18,623 | 1,365,687 |
| **TOTAL TRI TRANSFERS INTO DELAWARE REPORTED** | 1,533,124 | 402,886 | 1,936,010 |

Source: U.S. EPA 2005 Data Run, December 1, 2006

* TRI Reporting Facility

The top receiving facility is the Wilmington Wastewater Treatment Plant, receiving off-site TRI chemicals in wastewater. The DuPont Experimental Station received the second largest amount, a variety of chemicals for incineration from other DuPont facilities, all from out-of-state. The Kent County Wastewater Treatment Plant received the third largest amount, primarily from TRI-reporting industrial customers in the region. The fourth largest receiver of TRI chemicals in wastes is the New Castle Department of Public Works, receiving waste water from TRI-reporting customers in the region. These four receiving facilities accounted for 93.5% of all TRI chemicals received from in-state and out-of-state TRI facilities.

# Pollution Prevention/Reduction Programs in Delaware

The Delaware Pollution Prevention Program in the Department of Natural Resources and Environmental Control (DNREC) facilitates the implementation of pollution prevention by industry, government and society. The Pollution Prevention Program (P2 Program) serves a non-regulatory function to provide information, technical assistance, training, and leadership on issues related to reducing and eliminating the generation of wastes and pollutants. The early years of the P2 Program concentrated on industry and its wastes. In recent years, the program has assisted all aspects of Delaware's society, including expanded efforts to schools, environmental organizations, commercial and service businesses, and to State government itself.

Data for TRI reportable chemicals and other chemicals is becoming increasingly more available to the public. This public awareness has focused attention on the existence and quantity of these chemicals and on their management and possible reduction. Although EPCRA does not require a facility to reduce releases of chemicals reportable under its programs, many companies and facilities are aware of the public availability of the data in this and other EPCRA reports and have implemented programs to reduce or eliminate releases of these chemicals. These programs may take the form of efficiency improvements, reuse, recycling, energy recovery, or material substitutions. The benefits of these programs are reduced raw material and waste disposal costs and reduced risks associated with the toxic chemicals. Also, these reductions demonstrate corporate responsibility to the facility neighbors and improve the corporate image with the public.

There are numerous programs within DNREC that impact the management of TRI chemicals through the issuance of permits or through other regulatory and non-regulatory activities. Most releases reported under TRI are also regulated through air emission, water discharge, and/or land disposal permits. Potential sources of toxics undergo technical reviews through which potential threats to the environment and to human health are reviewed and identified prior to issuance of a permit. For example, the Engineering and Compliance Branch in the Air Quality Management Section enforces a provision in the Clean Air Act Amendment of 1990 that targets the control of hazardous air pollutants (HAPs). Nearly all HAPs are also reportable TRI chemicals. In addition, the Engineering and Compliance staff monitors TRI data to assess whether a facility complies with its Air Permits for TRI chemicals. Another example is the work performed by the Accidental Release Prevention (ARP) program. The ARP staff uses the TRI data to detect possible deficiencies at a facility that might result in an increased probability of an accidental release.

The Solid and Hazardous Waste Management Branch uses the TRI report to measure reductions of releases for the Waste Minimization Priority Chemicals list. The list is a result of EPA's Waste Minimization Program and has measurable goals that Delaware is working to attain. The DNREC Pollution Prevention program offers consultations to any generator of hazardous waste that requests it. The consultation is non-regulatory and non-enforcement in nature, and is aimed at helping the company to reduce any and all waste streams, including the priority chemicals.

During 2006, DNREC's Air Quality Management Section monitored ambient air quality at nine locations around the State. For more information, please refer to the "For Further Information" section under the 2005 Delaware Air Quality Report on page 56 of this report.

DNREC has developed a new Regulation (Regulation 1146) that will reduce air emissions from Delaware's coal and residual oil-fired power plants. The reason for the new regulation is to protect public health, safety, and welfare from pollutants which include nitrogen oxides (NOx), sulfur oxides (SOx), and mercury. A review committee made up of DNREC personnel, persons with environmental interests, persons impacted by the emissions from power plants, and power plant owners and operators assisted with the development of the regulation.

## NATIONAL PERSPECTIVE

The national 2005 TRI report has not been released by the U.S. EPA as of the writing of this report. However, placing the 2005 Delaware reports alongside the 2004 EPA reports yields some rankings that provide a perspective for Delaware in the national TRI picture. Changes in the 2005 national values may change these rankings.

This data shows that Delaware ranks 44$^{th}$ in the nation in total on-site releases for all TRI chemicals and 46$^{th}$ for on-site releases of dioxins. For on-site releases, 65 facilities in the nation each released more individually than all the facilities in Delaware combined, and for dioxins, 62 facilities each released more dioxins than all the facilities in Delaware combined. No Delaware facilities were in the top 100 for on-site releases of dioxins. Delaware provided 0.23% of the total on-site release amounts nationwide.

Some facilities in Delaware do rank near the top of the national rankings for specific releases. DuPont Edge Moor ranks #1 in the nation for off-site transfer of dioxin and dioxin-like compounds. Formosa Plastics ranks #4 in the nation for on-site release of vinyl chloride and #15 for on-site release of vinyl acetate. Valero ranks #36 for on-site release of hydrogen cyanide and #33 for cyanide compounds. Although no Delaware facility is in the top 100 for on-site release of mercury compounds, Occidental Chemical ranks #28 in the nation for total on-site release of elemental mercury and #11 for mercury on-site air release. Occidental Chemical closed their mercury-related chlor-alkali operation as of November, 2005, so their TRI mercury report amounts are expected to fall sharply in the 2006 reporting year. DaimlerChrysler ranks #30 for on-site release of n-methyl-2-pyrrolidone. The Indian River Power Plant ranks #53 for on-site release of hydrochloric acid. Delaware is ranked #21 in State rankings for on-site release of hydrochloric acid. The Indian River Power Plant ranks #72 within the coal and oil-fired electric generating facilities group (SIC 4911, 4931, and 4939) for total on-site release of all TRI chemicals.

Again, these comparisons are made using the 2005 Delaware TRI data and the 2004 National TRI data, so changes in the 2005 national amounts may change these rankings.

# FOR FURTHER INFORMATION

**Access to the TRI Files** - DNREC is responsible for collecting, processing, and distributing information submitted by Delaware facilities under the TRI program. This 2005 TRI report may be viewed at: http://www.serc.delaware.gov/reports.shtml. Additional information not contained in this report is available to the public through the EPCRA Reporting Program located within DNREC. A second, less technical data summary is available at the same location. A searchable database is located at: http://www.serc.delaware.gov/services/search/index.shtml .

The reports submitted by facilities are available for review through the Freedom of Information Act (FIOA) process from DNREC's EPCRA Reporting Program located at 156 South State Street in Dover. Custom reports can also be generated from the database. For information on placing a request, call the TRI Coordinator at (302) 739-4791 during business hours. An on-line FOIA application is also available at: http://www.dnrec.state.de.us/air/aqm_page/foia.htm .

**Chemical Data Fact Sheets** - A two-page fact sheet is available for most TRI chemicals reported in Delaware and contains information on chemical characteristics, health hazards, and ecological effects. These fact sheets were prepared by the EPCRA Reporting Program from information obtained through EPA's more lengthy TRI chemical fact sheets. The two-page fact sheets are available upon request. Additional TRI chemical information is available at: www.epa.gov/triinter/chemical/index.htm .

**EPA's TRI Home Page** - The TRI home page provides information on the many facets of the TRI program at EPA, including an Executive Summary, Q&A's, a link now to the 2004 TRI data, and later this year to 2005 data, a current list of reportable chemicals, reporting forms, state and federal program contacts, and various guidance documents available for downloading. This website has many links to other EPA and non-EPA sites associated with TRI: www.epa.gov/tri/ .

**Toxics Release Inventory Public Data Release** - EPA's annual TRI report. It covers information nationwide and provides a good perspective on how Delaware compares to other states: www.epa.gov/tri/tridata/index.htm . The 2005 edition of this report will be available early 2007 and will available for review at the DNREC office at 156 South State Street in Dover. It can also be obtained by calling the federal EPCRA Information Hotline at 1-800-424-9346.

**Envirofacts Electronic Warehouse** - Envirofacts is an EPA-developed website that provides public access to multiple environmental databases, including TRI. Links are available to data about hazardous waste, water permits, drinking water, Superfund sites, air, water, toxics, and more. On-line queries allow the user to retrieve data and create reports, as well as generate maps: www.epa.gov/enviro .

**Right-to-know Network** (RTK NET) - Searchable nationwide TRI data is available through RTK NET. RTK NET was established by two non-profit organizations to provide access to TRI and chemical data, link TRI with other environmental data, and exchange information among public interest groups: www.rtk.net .

**Delaware Public Health Cancer Rates and Causes** -This site provides data and answers to many cancer-related questions: http://www.state.de.us/dhss/dph/dpc/cancer.html .

**The Office of Pollution Prevention & Toxics** is a part of the EPA that:

- Promotes pollution prevention as the guiding principle for controlling industrial pollution;
- Promotes safer chemicals through a combination of regulatory and voluntary efforts;
- Promotes risk reduction so as to minimize exposure to existing substances such as lead, asbestos, dioxin, and polychlorinated biphenyls; and,
- Promotes public understanding of risks by providing understandable, accessible and complete information on chemical risks to the broadest audience possible.

It is also a link to *Risk-Screening Environmental Indicators.* This model was developed by EPA's Office of Pollution Prevention & Toxics as a risk-screening tool that provides a relative comparison of TRI releases. This application is available on CD-ROM or through the Internet. Both of these are available through: www.epa.gov/opptintr .

**Delaware's Pollution Prevention Program** can be accessed at: http://www.dnrec.state.de.us/dnrec2000/pollutionprevention.asp .

**Environmental Defense Fund Scorecard** - The EDF Scorecard combines scientific, geographic, technical, and legal information from many databases (with emphasis on TRI) to enable users to produce detailed local reports on toxic chemical pollution. Chemical profiles and a map generator are also available through the Scorecard: www.scorecard.org .

**2005 Delaware Air Quality Report** - The annual air quality report is prepared by the Air Surveillance Branch in the Air Quality Management Section of DNREC. This report presents data gathered from a statewide network of air monitoring stations, and includes analyses, trends, and other information regarding Delaware's ambient air quality. For a copy of the report, or for more information, please call (302) 323-4542. This report is available on-line at: www.dnrec.state.de.us/air/aqm_page/reports.htm . The EPA site for additional air quality information is: http://www.epa.gov/oar/oaqps/publicat.html .

**Delaware's Department Of Natural Resources and Environmental Control** has a variety of environmental information, publications, and reports available at: www.dnrec.state.de.us/dnrec2000/Elibrary.asp .

In addition to TRI, there are other provisions of the Emergency Planning and Community Right to Know Act (EPCRA), which provide information to the public as well as to local emergency planning and response organizations. Delaware has its own EPCRA statute which established these provisions under State law. For additional information, visit the Delaware EPCRA website at: http://www.serc.delaware.gov/epcra.shtml .

Questions or comments regarding the TRI program are welcome. Please direct questions, comments, or requests to:

TRI Coordinator
EPCRA Reporting Program
Emergency Prevention and Response Branch
Division of Air and Waste Management, DNREC
156 South State Street
Dover, DE 19901
Tel. (302) 739-9405, Fax (302) 739-3106
e-mail: john.parker@state.de.us